(FILE 'HOME' ENTERED AT 14:35:32 ON 15 OCT 2003)

FILE 'REGISTRY' ENTERED AT 14:35:48 ON 15 OCT 2003
L1 32 S FE AND (BE OR MG OR CA OR SR OR BA) AND (B OR AL OR GA OR IN)
L2 24 S (LI OR NA OR K) AND FE AND (BE OR MG OR CA OR SR OR BA) AND (

FILE 'CAPLUS' ENTERED AT 14:38:29 ON 15 OCT 2003

FILE 'REGISTRY' ENTERED AT 14:50:26 ON 15 OCT 2003
L3 0 S (LI OR NA OR K) AND FE AND (BE OR MG OR CA OR SR OR BA) AND (

FILE 'CAPLUS' ENTERED AT 14:54:23 ON 15 OCT 2003

FILE 'REGISTRY' ENTERED AT 14:58:36 ON 15 OCT 2003
L4 0 S (LI AND NA) AND FE AND (BE OR MG OR CA OR SR OR BA) AND (B OR
L5 0 S (LI AND K) AND FE AND (BE OR MG OR CA OR SR OR BA) AND (B OR
L6 0 S (NA AND K) AND FE AND (BE OR MG OR CA OR SR OR BA) AND (B OR
L7 0 S (LI AND NA AND K) AND FE AND (BE OR MG OR CA OR SR OR BA) AND
L8 0 S (LI) AND FE AND (BE OR MG OR CA OR SR OR BA OR RA) AND (B OR
L9 0 S (LI) AND FE AND (BE OR MG OR CA OR SR OR BA OR RA) AND (B OR
L10 0 S (LI AND NA) AND FE AND (BE OR MG OR CA OR SR OR BA OR RA) AND
L11 0 S (LI AND K) AND FE AND (BE OR MG OR CA OR SR OR BA OR RA) AND
L12 0 S (K AND NA) AND FE AND (BE OR MG OR CA OR SR OR BA OR RA) AND
L13 0 S (LI AND K AND NA) AND FE AND (BE OR MG OR CA OR SR OR BA OR R
L14 0 S (LI) AND CO AND (BE OR MG OR CA OR SR OR BA OR RA) AND (B OR
L15 0 S (LI AND NA) AND CO AND (BE OR MG OR CA OR SR OR BA OR RA) AND
L16 0 S (LI AND K) AND CO AND (BE OR MG OR CA OR SR OR BA OR RA) AND
L17 0 S (NA AND K) AND CO AND (BE OR MG OR CA OR SR OR BA OR RA) AND
L18 0 S (LI AND NA AND K) AND CO AND (BE OR MG OR CA OR SR OR BA OR R
L19 0 S (LI) AND NI AND (BE OR MG OR CA OR SR OR BA OR RA) AND (B OR
L20 0 S (LI AND NA) AND NI AND (BE OR MG OR CA OR SR OR BA OR RA) AND
L21 0 S (LI AND K) AND NI AND (BE OR MG OR CA OR SR OR BA OR RA) AND
L22 0 S (NA AND K) AND NI AND (BE OR MG OR CA OR SR OR BA OR RA) AND
L23 0 S (LI AND NA AND K) AND NI AND (BE OR MG OR CA OR SR OR BA OR R
L24 0 S (LI OR NA OR K) AND NI AND (BE OR MG OR CA OR SR OR BA OR RA)
L25 0 S (LI OR NA OR K) AND FE AND (BE OR MG OR CA OR SR OR BA OR RA)
L26 0 S (LI OR NA OR K) AND CO AND (BE OR MG OR CA OR SR OR BA OR RA)
L27 0 S (LI OR NA OR K) AND TI AND (BE OR MG OR CA OR SR OR BA OR RA)
L28 0 S (LI AND NA) AND TI AND (BE OR MG OR CA OR SR OR BA OR RA) AND
L29 0 S (LI AND K) AND TI AND (BE OR MG OR CA OR SR OR BA OR RA) AND
L30 0 S (NA AND K) AND TI AND (BE OR MG OR CA OR SR OR BA OR RA) AND
L31 0 S (LI AND NA AND K) AND TI AND (BE OR MG OR CA OR SR OR BA OR R
L32 0 S (LI OR NA OR K) AND V AND (BE OR MG OR CA OR SR OR BA OR RA)
L33 0 S (LI AND K) AND V AND (BE OR MG OR CA OR SR OR BA OR RA) AND (
L34 0 S (NA AND K) AND V AND (BE OR MG OR CA OR SR OR BA OR RA) AND (
L35 0 S (NA AND K) AND V AND (BE OR MG OR CA OR SR OR BA OR RA) AND (
L36 0 S (LI AND NA AND K) AND V AND (BE OR MG OR CA OR SR OR BA OR RA
L37 0 S (LI AND NA) AND V AND (BE OR MG OR CA OR SR OR BA OR RA) AND
L38 0 S (LI OR NA OR K) AND CR AND (BE OR MG OR CA OR SR OR BA OR RA)
L39 0 S (LI AND NA AND K) AND CR AND (BE OR MG OR CA OR SR OR BA OR R
L40 0 S (LI AND NA) AND CR AND (BE OR MG OR CA OR SR OR BA OR RA) AND
L41 0 S (NA AND K) AND CR AND (BE OR MG OR CA OR SR OR BA OR RA) AND
L42 0 S (LI AND K) AND CR AND (BE OR MG OR CA OR SR OR BA OR RA) AND
L43 0 S (LI AND NA AND K) AND MN AND (BE OR MG OR CA OR SR OR BA OR R
L44 0 S (LI OR NA OR K) AND MN AND (BE OR MG OR CA OR SR OR BA OR RA)
L45 0 S (LI AND K) AND MN AND (BE OR MG OR CA OR SR OR BA OR RA) AND
L46 0 S (LI AND NA) AND MN AND (BE OR MG OR CA OR SR OR BA OR RA) AND
L47 0 S (NA AND K) AND MN AND (BE OR MG OR CA OR SR OR BA OR RA) AND
L48 0 S (LI AND NA AND K) AND (BE OR MG OR CA OR SR OR BA OR RA) AND
L49 2 S (LI OR NA OR K) AND (BE OR MG OR CA OR SR OR BA OR RA) AND (B
L50 0 S (NA AND K) AND (BE OR MG OR CA OR SR OR BA OR RA) AND (B OR A
L51 0 S (LI AND NA) AND (BE OR MG OR CA OR SR OR BA OR RA) AND (B OR

L52 0 S (LI AND K) AND (BE OR MG OR CA OR SR OR BA OR RA) AND (B OR A

FILE 'CAPLUS' ENTERED AT 15:18:40 ON 15 OCT 2003

L53 59 S L49

(FILE 'HOME' ENTERED AT 16:44:12 ON 15 OCT 2003)

FILE 'REGISTRY' ENTERED AT 16:44:21 ON 15 OCT 2003

L1 0 S (LI OR NA OR K) AND (SC OR Y OR LA OR AC) AND (BE OR MG OR CA
L2 0 S (LI AND NA AND K) AND (SC OR Y OR LA OR AC) AND (BE OR MG OR
L3 0 S (LI AND NA) AND (SC OR Y OR LA OR AC) AND (BE OR MG OR CA OR
L4 0 S (LI AND K) AND (SC OR Y OR LA OR AC) AND (BE OR MG OR CA OR S
L5 0 S (NA AND K) AND (SC OR Y OR LA OR AC) AND (BE OR MG OR CA OR S
L6 2 S (LI OR NA OR K) AND (B OR AL OR GA OR IN OR TL) AND (BE OR MG
L7 0 S (LI AND NA AND K) AND (B OR AL OR GA OR IN OR TL) AND (BE OR
L8 0 S (LI AND NA) AND (B OR AL OR GA OR IN OR TL) AND (BE OR MG OR
L9 0 S (LI AND K) AND (B OR AL OR GA OR IN OR TL) AND (BE OR MG OR C
L10 0 S (NA AND K) AND (B OR AL OR GA OR IN OR TL) AND (BE OR MG OR C

FILE 'CAPLUS' ENTERED AT 16:49:13 ON 15 OCT 2003

L11 59 S L6

FILE 'REGISTRY' ENTERED AT 16:49:52 ON 15 OCT 2003

L12 2 S (LI OR NA OR K) AND (B OR AL OR GA OR IN OR TL) AND (BE OR MG
L13 0 S L12 NOT L6
L14 95 S (LI OR NA OR K) AND FE AND (BE OR MG OR CA OR SR OR BA OR RA
L15 0 S (LI OR NA OR K) AND FE AND (BE OR MG OR CA OR SR OR BA OR RA

FILE 'CAPLUS' ENTERED AT 17:06:09 ON 15 OCT 2003

L16 420260 S L14
L17 14211 S L16 (S) (ELECTRODE OR ANODE OR CATHODE)

FILE 'REGISTRY' ENTERED AT 17:08:42 ON 15 OCT 2003

FILE 'CAPLUS' ENTERED AT 17:08:47 ON 15 OCT 2003

L18 29 S L16 AND (LITHIUM (2A) IRON (3A) PHOSPHATE)

	Type	L #	Hits	Search Text	DBs	Time Stamp	Comments	Error Definition	Errors
1	IS&R	L1	1	("20020124386").PN.	US-PGPUB	2003/10/15 16:56			0
2	IS&R	L2	1	("20020150816").PN.	US-PGPUB	2003/10/15 16:57			0
3	BRS	L3	2	"2001307726"	EPO; JPO; DERWENT	2003/10/15 16:58			0
4	BRS	L4	6	"1094532"	EPO; JPO; DERWENT	2003/10/15 17:11			0
5	BRS	L5	95	(BARKER near3 JEREMY).in.	USPAT; US-PGPUB; EPO; JPO; DERWENT	2003/10/15 17:15			0
6	BRS	L6	53	(SAIDI near3 YAZID).in.	USPAT; US-PGPUB; EPO; JPO; DERWENT	2003/10/15 17:17			0
7	BRS	L7	23	(SWOYER near3 JEFFREY).in.	USPAT; US-PGPUB; EPO; JPO; DERWENT	2003/10/15 17:18			0
8	BRS	L8	110	5 6 7	USPAT; US-PGPUB; EPO; JPO; DERWENT	2003/10/15 17:18			0
9	BRS	L9	22	8 and (lithium near4 phosphate)	USPAT; US-PGPUB; EPO; JPO; DERWENT	2003/10/15 17:18			0

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L18 ANSWER 1 OF 29 CAPLUS COPYRIGHT 2003 ACS on STN
ACCESSION NUMBER: 2003:757154 CAPLUS
TITLE: Layered electrodes for lithium cells and batteries
INVENTOR(S): Johnson, Christopher S.; Thackeray, Michael M.; Vaughey, John T.; Kahaian, Arthur J.; Kim, Jeom-soo
PATENT ASSIGNEE(S): The University of Chicago, USA
SOURCE: U.S. Pat. Appl. Publ., 28 pp.
CODEN: USXXCO
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 2003180616	A1	20030925	US 2003-365286	20030212
PRIORITY APPLN. INFO.:			US 2002-357393P P	20020215

IT Battery cathodes
Battery electrodes
(layered electrodes for lithium cells and batteries)
IT Metals
Oxides (inorganic)
RL: CPS (Chemical process); PEP (Physical, engineering or chemical process); PROC (Process)
(layered electrodes for lithium cells and batteries)
IT Intermetallic compounds
Nitrides
RL: DEV (Device component use); USES (Uses)
(layered electrodes for lithium cells and batteries)
IT Inorganic compounds
RL: DEV (Device component use); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)
(layered; layered electrodes for lithium cells and batteries)
IT Secondary batteries
(lithium; layered electrodes for lithium cells and batteries)
IT 109-72-8, n-Butyllithium 546-68-9 1310-66-3, Lithium hydroxide monohydrate 7308-67-0, Lithium naphthalide 7439-93-2, Lithium 7440-44-0, Carbon **7782-42-5**, Graphite 244129-80-4, Manganese nickel hydroxide Mn0.5Ni0.5(OH)2
RL: CPS (Chemical process); PEP (Physical, engineering or chemical process); PROC (Process)
(layered electrodes for lithium cells and batteries)
IT 96-49-1, Ethylene carbonate 105-58-8, Diethyl carbonate 21324-40-3, Lithium hexafluorophosphate
RL: DEV (Device component use); USES (Uses)
(layered electrodes for lithium cells and batteries)
IT 12031-65-1P, lithium nickel oxide linio2 12162-79-7P, lithium manganese oxide limno2 12190-79-3P, cobalt lithium oxide colio2 13824-63-0P, cobalt lithium phosphate colipo4 13826-59-0P, lithium manganese phosphate limnpo4 15365-14-7P, **iron lithium phosphate** felipo4 128975-24-6DP, Lithium manganese nickel oxide LiMn0.5Ni0.5O2, Li intercalated 128975-24-6P, Lithium manganese nickel oxide LiMn0.5Ni0.5O2 176087-62-0P, Lithium manganese oxide Li1-1.33Mn1.67-2O4 193214-24-3P, Aluminum cobalt lithium nickel oxide Al0.05Co0.15LiNi0.8O2 309242-27-1P, Cobalt lithium magnesium nickel titanium oxide Co0.15LiMg0.05Ni0.75Ti0.05O2 346417-97-8P, Cobalt lithium manganese nickel oxide Co0.33LiMn0.33Ni0.33O2 448897-02-7DP, Lithium manganese nickel titanium oxide Li1.02Mn0.46Ni0.46Ti0.05O2, Li intercalated 448897-02-7P, Lithium manganese nickel titanium oxide

Li1.02Mn0.46Ni0.46Ti0.05O2 602319-07-3P
RL: DEV (Device component use); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)
(layered electrodes for lithium cells and batteries)

IT 7664-41-7, Ammonia
RL: CPS (Chemical process); PEP (Physical, engineering or chemical process); PROC (Process)
(lithium soln.; layered electrodes for lithium cells and batteries)

TI Layered electrodes for lithium cells and batteries

AB Lithium metal oxide compds. of nominal formula Li2MO2, in which M represents two or more pos. charged metal ions, selected predominantly and preferably from the first row of transition metals are disclosed herein. The Li2MO2 compds. have a layered-type structure, which can be used as pos. electrodes for lithium electrochem. cells, or as a precursor for the in-situ electrochem. fabrication of LiMO2 electrodes. The Li2MO2 compds. of the invention may have addnl. functions in lithium cells, for example, as end-of-discharge indicators, or as neg. electrodes for lithium cells.

L18 ANSWER 2 OF 29 CAPLUS COPYRIGHT 2003 ACS on STN
ACCESSION NUMBER: 2003:717589 CAPLUS
DOCUMENT NUMBER: 139:233058
TITLE: Alkali transition metal phosphates and related electrode active materials
INVENTOR(S): Barker, Jeremy; Saidi, M. Yazid; Swoyer, Jeffrey L.
PATENT ASSIGNEE(S): UK
SOURCE: U.S. Pat. Appl. Publ., 14 pp.
CODEN: USXXCO
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 2003170542	A1	20030911	US 2002-92317	20020306
WO 2003077335	A1	20030918	WO 2003-US6998	20030305

W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM

RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG

PRIORITY APPLN. INFO.: US 2002-92317 A 20020306

IT Battery anodes
Battery cathodes
(alkali transition metal phosphates and related electrode active materials)

IT Oxides (inorganic), uses
RL: DEV (Device component use); USES (Uses)
(alkali transition metal phosphates and related electrode active materials)

IT Carbonaceous materials (technological products)
RL: MOA (Modifier or additive use); USES (Uses)
(alkali transition metal phosphates and related electrode active materials)

IT Chalcogenides
RL: DEV (Device component use); USES (Uses)

(metal; alkali transition metal phosphates and related electrode active materials)

IT 7440-44-0, Carbon, uses **7782-42-5**, Graphite, uses
RL: DEV (Device component use); USES (Uses)
(alkali transition metal phosphates and related electrode active materials)

IT 595567-51-4P, Lithium nickel phosphate (Li0.5Ni1.25PO4) 595567-52-5P 595567-53-6P, **Iron lithium** magnesium **phosphate** (FeLi0.8Mg0.1PO4) 595567-55-8P 595567-59-2P, **Iron lithium** magnesium manganese **phosphate** (Fe0.5Li0.8Mg0.1Mn0.5PO4) 595567-63-8P, Cobalt lithium magnesium phosphate (Co0.6Li0.5Mg0.65(PO4))
RL: DEV (Device component use); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)
(alkali transition metal phosphates and related electrode active materials)

TI Alkali transition metal phosphates and related electrode active materials

AB The invention concerns electrode active materials comprising lithium or other alkali metals, a transition metal, and a phosphate or similar moiety, of the formula: Aa+xMbP1-xSixO4 wherein (1) A is selected from the group consisting of Li, Na, K, and mixts. thereof, and 0<a<1.0 and 0.ltoreq.x.ltoreq.1 and (2) M comprises one or more metals, comprising at least one metal which is capable of undergoing oxidn. to a higher valence state, where 0<b.ltoreq.2; and wherein M, a, b, and x are selected so as to maintain electroneutrality of the compd. In a preferred embodiment, M comprises at least one transition metal selected from Groups 4 to 11 of the Periodic Table. In another preferred embodiment, M comprises M'cM''d , where M' is at least one transition metal from Groups 4 to 11 of the Periodic Table; and M'' is at least one element from Groups 2, 3, 12, 13, or 14 of the Periodic Table, and c+d = b. Preferably, 0.1.ltoreq.a.ltoreq.0.8. Preferred embodiments include those having a structure similar to the mineral olivine. This invention also provides electrodes comprising an electrode active material of this invention, and batteries that comprise a first electrode having an electrode active material of this invention; a second electrode; and an electrolyte.

L18 ANSWER 3 OF 29 CAPLUS COPYRIGHT 2003 ACS on STN
ACCESSION NUMBER: 2003:657067 CAPLUS
DOCUMENT NUMBER: 139:167004
TITLE: Manufacture of cathode active mass and secondary nonaqueous electrolyte battery
INVENTOR(S): Okawa, Tsuyoshi; Fukushima, Yuzuru
PATENT ASSIGNEE(S): Sony Corporation, Japan
SOURCE: PCT Int. Appl., 21 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2003069701	A1	20030821	WO 2003-JP1192	20030205
W: CN, KR, US				
RW: AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, SE, SI, SK, TR				
JP 2003242974	A2	20030829	JP 2002-37200	20020214

PRIORITY APPLN. INFO.: JP 2002-37200 A 20020214

IT 7439-93-2, Lithium, uses **7782-42-5**, Graphite, uses
RL: DEV (Device component use); USES (Uses)
(anode; manuf. of cathode active mass contg. **lithium iron phosphates** for secondary lithium batteries)

IT 15365-14-7P, **Iron lithium phosphate** (FeLiPO4)
RL: DEV (Device component use); IMF (Industrial manufacture); PREP (Preparation); USES (Uses)
(cathode active mass; manuf. of cathode active mass contg. **lithium iron phosphates** for secondary lithium batteries)

IT 108-32-7, Propylene carbonate 616-38-6, Dimethyl carbonate 9011-17-0, Hexafluoropropylene-vinylidene fluoride copolymer 21324-40-3, Lithium hexafluorophosphate
RL: DEV (Device component use); USES (Uses)
(electrolyte; manuf. of cathode active mass contg. **lithium iron phosphates** for secondary lithium batteries)

IT 10028-23-6, Ferrous phosphate octahydrate 10377-52-3, Lithium phosphate (Li3PO4)
RL: CPS (Chemical process); PEP (Physical, engineering or chemical process); PROC (Process)
(manuf. of cathode active mass contg. **lithium iron phosphates** for secondary lithium batteries)

TI Manufacture of cathode active mass and secondary nonaqueous electrolyte battery

AB The active mass, represented by a compn. LixFe1-yMyPO4 (M = Mn, Cr, Co, Cu, Ni, V, Mo, Ti, Zn, Al, Ga, Mg, B, and/or Nb; X = 0.05-1.2; 0.ltoreq.y<0.8), is prepd. by mixing Fe3(PO4)2.cntdot.n H2O (n = hydration no. 0-8) with Li3PO4, and firing the raw material mixt.; where the mixt. has a half width of the max. peak .ltoreq.1.0.degree. by CuK.alpha. X-ray diffraction spectrum. The battery, having a cathode contg. the above cathode active mass, an anode contg. an anode active mass, and a nonaq. electrolyte, is manufd. by prepg. the above required cathode active mass.

REFERENCE COUNT: 2 THERE ARE 2 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L18 ANSWER 4 OF 29 CAPLUS COPYRIGHT 2003 ACS on STN
ACCESSION NUMBER: 2003:656288 CAPLUS
DOCUMENT NUMBER: 139:182873
TITLE: Lithium ion battery with improved safety
INVENTOR(S): Chen, Chun-Hua; Hyung, Yoo Eup; Vissers, Donald R.; Amine, Khalil
PATENT ASSIGNEE(S): USA
SOURCE: U.S. Pat. Appl. Publ., 14 pp.
CODEN: USXXCO
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 2003157413	A1	20030821	US 2002-77569	20020215

PRIORITY APPLN. INFO.: US 2002-77569 20020215

IT Battery anodes
Fire-resistant materials
Safety
(lithium ion battery with improved safety)

IT Secondary batteries
(lithium; lithium ion battery with improved safety)

IT 89-32-7 108-05-4, Vinyl acetate, uses 302-01-2, Hydrazine, uses 486-25-9, 9-Fluorenone 614-99-3, Ethyl-2-furoate 931-40-8, 4-Hydroxymethyl-1,3-dioxolan-2-one 1025-15-6 4427-96-7, Vinyl ethylene carbonate 4437-80-3, 4,4-Dimethyl-5-methylene-1,3-dioxolan-2-one 14861-06-4, Crotonic acid, vinyl ester 15896-04-5, 4,5-Diethenyl-1,3-dioxolan-2-one 19693-75-5 27797-53-1, 1,3-Dioxolan-2-one, 4,5-diphenyl

40492-31-7, 4-Methoxymethyl-1,3-dioxolan-2-one 51985-12-7 69124-14-7
95348-48-4 95924-48-4 130221-78-2 135159-09-0 148481-75-8
557084-91-0 579490-82-7, 1,4-Dioxa-2-silacyclopentan-5-one 579490-83-8
579490-84-9 581054-51-5 581054-52-6 581054-53-7
RL: MOA (Modifier or additive use); USES (Uses)
(anode passivation material; lithium ion battery with improved safety)

IT 115-86-6, Triphenyl phosphate 463-79-6D, Carbonic acid, cyclic Et ester 2752-95-6, Butyl Diphenyl phosphate 7664-38-2D, Phosphoric acid, alkyl Ph ester
RL: MOA (Modifier or additive use); USES (Uses)
(flame retardant; lithium ion battery with improved safety)

IT 96-49-1, Ethylene carbonate 108-32-7, Propylene carbonate 616-38-6, Dimethylcarbonate 623-53-0, Ethyl methyl carbonate 1313-99-1, Nickel oxide, uses 1332-37-2, Iron oxide, uses **7782-42-5**, Graphite, uses 7791-03-9, Lithium perchlorate 10124-54-6, Manganese phosphate 10377-52-3, Lithium phosphate 10381-36-9, Nickel phosphate 10402-24-1, **Iron phosphate** 11104-61-3, Cobalt oxide 11129-60-5, Manganese oxide 12057-24-8, Lithium oxide, uses 14283-07-9, Lithium tetrafluoroborate 17409-91-5, Cobalt phosphate 21324-40-3, Lithium hexafluorophosphate 29935-35-1, Lithium hexafluoroarsenate
RL: DEV (Device component use); USES (Uses)
(**lithium** ion battery with improved safety)

IT 88-12-0, n-Vinyl-2-pyrrolidinone, uses 110-54-3D, Hexane, fluoridated 513-08-6, Tripropyl phosphate 2528-36-1, Dibutyl phenyl phosphate 4427-92-3, Phenyl ethylene carbonate 23466-13-9, Phosphoric acid, dibutyl vinyl ester 27460-01-1, Diphenyl propyl phosphate 29383-23-1, Vinylimidazole 38299-59-1, Phenyl dipropyl phosphate 54952-38-4 105234-62-6 114435-02-8, Fluoroethylene carbonate 171730-81-7 581054-54-8
RL: MOA (Modifier or additive use); USES (Uses)
(lithium ion battery with improved safety)

TI Lithium ion battery with improved safety

AB A lithium battery with improved safety is disclosed that utilizes one or more additives in the battery electrolyte soln. wherein a lithium salt is dissolved in an org. solvent, which may contain propylene carbonate. For example, a blend of 2 wt% tri-Ph phosphate, 1 wt% di-Ph monobutyl phosphate and 2 wt% vinyl ethylene carbonate additives has been found to significantly enhance the safety and performance of Li-ion batteries using a LiPF6 salt in EC/DEC electrolyte solvent. The invention relates to both the use of individual additives and to blends of additives such as that shown in the above example at concns. of 1 to 4-wt% in the lithium battery electrolyte. This invention relates to additives that suppress gas evolution in the cell, passivate graphite electrode and protect it from exfoliating in the presence of propylene carbonate solvents in the electrolyte, and retard flames in the lithium batteries.

L18 ANSWER 5 OF 29 CAPLUS COPYRIGHT 2003 ACS on STN
ACCESSION NUMBER: 2003:473087 CAPLUS
DOCUMENT NUMBER: 139:39170
TITLE: Phosphate additives for nonaqueous electrolyte rechargeable electrochemical cells
INVENTOR(S): Gan, Hong; Takeuchi, Esther S.; Rubino, Robert
PATENT ASSIGNEE(S): USA
SOURCE: U.S. Pat. Appl. Publ., 11 pp., Cont.-in-part of U.S. -723,059.
CODEN: USXXCO
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 3
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE

US 2003113635	A1	20030619	US 2002-251137		20020920
US 6203942	B1	20010320	US 1999-303877		19990503
PRIORITY APPLN. INFO.:			US 1998-105279P	P	19981022
			US 1999-303877	A2	19990503
			US 2000-723059	A2	20001127

IT Secondary batteries
(lithium; phosphate additives for nonaq. electrolyte rechargeable electrochem. cells)

IT Battery electrolytes
Secondary batteries
(phosphate additives for nonaq. electrolyte rechargeable electrochem. cells)

IT Carbon black, uses
Carbon fibers, uses
Coke
RL: DEV (Device component use); USES (Uses)
(phosphate additives for nonaq. electrolyte rechargeable electrochem. cells)

IT Fluoropolymers, uses
RL: MOA (Modifier or additive use); USES (Uses)
(phosphate additives for nonaq. electrolyte rechargeable electrochem. cells)

IT 7440-44-0, Carbon, uses
RL: DEV (Device component use); USES (Uses)
(glassy; phosphate additives for nonaq. electrolyte rechargeable electrochem. cells)

IT 96-49-1, Ethylene carbonate 108-32-7, Propylene carbonate 556-65-0, Lithium thiocyanate 872-36-6, Vinylene carbonate 2923-17-3 2923-20-8 4437-85-8, Butylene carbonate 7439-93-2, Lithium, uses **7782-42-5**, Graphite, uses 7790-69-4, Lithium nitrate 7791-03-9, Lithium perchlorate 11113-67-0, **Iron lithium** oxide 11126-15-1, Lithium vanadium oxide 12031-63-9, Lithium niobium oxide (LiNbO3) 12680-08-9, Lithium titanium sulfide 13453-75-3, Lithium fluorosulfate 14024-11-4, Lithium tetrachloroaluminate 14283-07-9, Lithium tetrafluoroborate 14485-20-2, Lithium tetraphenyl borate 15955-98-3, Lithium tetrachlorogallate 18424-17-4, Lithium hexafluoroantimonate 21324-40-3, Lithium hexafluorophosphate 29935-35-1, Lithium hexafluoroarsenate 33454-82-9, Lithium triflate 37296-91-6, Lithium molybdenum oxide 37367-96-7, Lithium molybdenum sulfide 39300-70-4, Lithium nickel oxide 39302-37-9, Lithium titanium oxide 39457-42-6, Lithium manganese oxide 51177-06-1, Chromium lithium oxide 52627-24-4, Cobalt lithium oxide 56321-19-8, Lithium niobium sulfide 61673-65-2, Lithium niobium selenide 61673-69-6, Lithium titanium selenide 61673-70-9, Lithium titanium telluride 61673-71-0, Lithium vanadium selenide 74245-06-0, Lithium vanadium sulfide 80341-49-7, **Iron lithium** sulfide 90076-65-6 96352-80-6, Lithium molybdenum selenide 96352-81-7, Lithium molybdenum telluride 103288-79-5, Cobalt lithium sulfide 104708-77-2, Copper lithium oxide 115028-88-1 132404-42-3 148884-75-7, Cobalt lithium selenide 264142-74-7, Lithium vanadium telluride 264142-75-8, Chromium lithium sulfide 264142-76-9, Chromium lithium selenide 264142-77-0, Chromium lithium telluride 264142-78-1, Copper lithium sulfide 264142-79-2, Copper lithium selenide 264142-80-5, Copper lithium telluride 264142-81-6, Lithium niobium telluride 264142-82-7, **Iron lithium** selenide 264142-83-8, **Iron lithium** telluride 264142-84-9, Lithium nickel sulfide 264142-85-0, Lithium nickel selenide 264142-86-1, Lithium nickel telluride 264142-87-2, Cobalt lithium telluride 264142-88-3, Lithium manganese sulfide 264142-89-4, Lithium manganese selenide 264142-90-7, Lithium manganese telluride
RL: DEV (Device component use); USES (Uses)

(**phosphate** additives for nonaq. electrolyte rechargeable electrochem. cells)

IT 105-58-8, Diethyl carbonate 616-38-6, Dimethyl carbonate 623-53-0, Ethyl methyl carbonate 623-96-1, Dipropyl carbonate 1623-07-0, Benzyl phosphate 1623-08-1, Dibenzyl phosphate 1623-10-5, Diallyl methyl phosphate 1623-11-6, Allyl dimethyl phosphate 1623-19-4, Triallyl phosphate 1707-92-2, Tribenzyl phosphate 1779-34-6, TriPropargyl phosphate 7748-09-6, Diallyl phosphate 25022-72-4, Allyl phosphate 26292-51-3, Phosphoric acid, methyl bis(phenylmethyl) ester 35363-40-7, Ethyl propyl carbonate 55343-62-9, Propargyl phosphate 56379-74-9 56525-42-9, Methyl propyl carbonate 67293-73-6, Benzyl methyl phosphate 433979-69-2, Phosphoric acid, dimethyl nitromethyl ester 433979-70-5, Dipropargyl phosphate 433979-71-6, Phosphoric acid, cyanomethyl dimethyl ester 433979-72-7, Phosphoric acid, bis(cyanomethyl) methyl ester
RL: MOA (Modifier or additive use); USES (Uses)
(phosphate additives for nonaq. electrolyte rechargeable electrochem. cells)

IT 7429-90-5, Aluminum, uses 7440-02-0, Nickel, uses 7440-32-6, Titanium, uses 12597-68-1, Stainless steel, uses
RL: MOA (Modifier or additive use); USES (Uses)
(powder; phosphate additives for nonaq. electrolyte rechargeable electrochem. cells)

TI Phosphate additives for nonaqueous electrolyte rechargeable electrochemical cells

AB A lithium ion electrochem. cell having high charge/discharge capacity, long cycle life and exhibiting a reduced first cycle irreversible capacity, is disclosed. The stated benefits are realized by the addn. of at least one phosphate additive having the formula: (R1O)P(=O)(OR2)(OR3) and wherein R1 , R2 and R3 are the same or different, wherein at least one, but not all three, of the R groups is hydrogen, or at least one of the R groups has at least 3 carbon atoms and contains an sp or sp2 hybridized carbon atom bonded to an sp3 hybridized carbon atom bonded to the oxygen atom bonded to the phosphorous atom.

L18 ANSWER 6 OF 29 CAPLUS COPYRIGHT 2003 ACS on STN
ACCESSION NUMBER: 2003:437558 CAPLUS
DOCUMENT NUMBER: 139:216870
TITLE: Cycling performance of low-cost lithium ion batteries with natural graphite and LiFePO4
AUTHOR(S): Shim, Joongpyo; Striebel, Kathryn A.
CORPORATE SOURCE: Environmental Energy Technologies Division, Lawrence Berkeley National Laboratory, Berkeley, CA, 94720, USA
SOURCE: Journal of Power Sources (2003), 119-121, 955-958
CODEN: JPSODZ; ISSN: 0378-7753
PUBLISHER: Elsevier Science B.V.
DOCUMENT TYPE: Journal
LANGUAGE: English

IT Secondary batteries
(cycling performance of low-cost lithium-ion batteries with natural graphite anode and **lithium iron phosphate** cathode)

IT **7782-42-5**, Graphite, uses
RL: DEV (Device component use); USES (Uses)
(anode; cycling performance of low-cost lithium-ion batteries with natural graphite anode and **lithium iron phosphate** cathode)

IT 15365-14-7, **Iron lithium phosphate** (FeLiPO4)
RL: DEV (Device component use); USES (Uses)
(cathode; cycling performance of low-cost lithium-ion batteries with natural graphite anode and **lithium iron phosphate** cathode)

TI Cycling performance of low-cost lithium ion batteries with natural

graphite and LiFePO4

AB Low-cost lithium-ion batteries with LiFePO4 cathode and natural graphite anode were cycled in electrolyte contg. 1M LiBF4, ethylene carbonate, and di-Et carbonate at 100% depth of discharge and 25.degree. in order to investigate cycle performance and diagnostics for capacity fading. The 12 cm2 pouch cell showed 65% of capacity retention at 5C compared to that at C/25. The cell showed 80% of initial capacity after 80 cycles and its capacity fade rate was 11.3 .mu.A-h/cycle during const. C/2 cycling. In hybrid pulse power characterization, the discharge resistance of this cell was higher than com. graphite/LiCoO2 cell because of low lithium diffusivity in LiFePO4. Slow rate cycling in pouch full cell showed almost 40% of capacity fade after 100 cycles. However, the cathode and anode after 100 cycles did not show any capacity fading in half-cell test after disassembling full cell, suggesting that capacity fade in the full cell is caused by loss of cycleable Li.

REFERENCE COUNT: 12 THERE ARE 12 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L18 ANSWER 7 OF 29 CAPLUS COPYRIGHT 2003 ACS on STN

ACCESSION NUMBER: 2003:437557 CAPLUS

DOCUMENT NUMBER: 139:216869

TITLE: LiFePO4/gel/natural graphite cells for the BATT program

AUTHOR(S): Striebel, K.; Guerfi, A.; Shim, J.; Armand, M.; Gauthier, M.; Zaghib, K.

CORPORATE SOURCE: Environmental Energy Technologies Division, Lawrence Berkeley National Laboratory, Berkeley, CA, 94720, USA

SOURCE: Journal of Power Sources (2003), 119-121, 951-954
CODEN: JPSODZ; ISSN: 0378-7753

PUBLISHER: Elsevier Science B.V.

DOCUMENT TYPE: Journal

LANGUAGE: English

IT Secondary batteries
(cycle and calendar life detn. of batteries with **lithium iron phosphate** cathode and natural graphite anode)

IT **7782-42-5**, Graphite, uses
RL: DEV (Device component use); USES (Uses)
(anode; cycle and calendar life detn. of batteries with **lithium iron phosphate** cathode and natural graphite anode)

IT 15365-14-7, **Iron lithium phosphate** (FeLiPO4)
RL: DEV (Device component use); USES (Uses)
(cathode; cycle and calendar life detn. of batteries with **lithium iron phosphate** cathode and natural graphite anode)

TI LiFePO4/gel/natural graphite cells for the BATT program

AB LiFePO4/gel/natural graphite (NG) batteries have been prepd. and cycled under a fixed protocol for cycle and calendar life detn. Battery compression of 68 kPa was found to represent an optimal balance between battery impedance and the first cycle losses on the individual electrodes with the gel electrolyte. Cells with a Li anode showed capacities of 160 and 78 mA-h/g LiFePO4 for C/25 and 2C discharge rates, resp. Rapid capacity and power fade were obsd. in the LiFePO4/gel/NG batteries during cycling and calendar life studies. Diagnostic evaluations point to the consumption of cycleable Li by a side reaction as the reason for performance fade with minimal degrdn. of the individual electrodes.

REFERENCE COUNT: 5 THERE ARE 5 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L18 ANSWER 8 OF 29 CAPLUS COPYRIGHT 2003 ACS on STN

ACCESSION NUMBER: 2003:413937 CAPLUS

DOCUMENT NUMBER: 138:404345

TITLE: Battery structures, self-organizing structures and

related methods

INVENTOR(S): Chiang, Yet Ming; Moorehead, William Douglas; Gozdz, Antoni S.; Holman, Richard K.; Loxley, Andrew; Riley, Gilbert N.; Viola, Michael S.

PATENT ASSIGNEE(S): A123systems, Inc., USA

SOURCE: U.S. Pat. Appl. Publ., 70 pp., Cont.-in-part of U.S. Ser. No. 21,740.
CODEN: USXXCO

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 3

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 2003099884	A1	20030529	US 2002-206662	20020726
US 2003082446	A1	20030501	US 2001-21740	20011022

PRIORITY APPLN. INFO.: US 2001-308360P P 20010727
US 2001-21740 A2 20011022
US 2000-242124P P 20001020

IT Battery anodes
Battery cathodes
Coating process
Embossing
(battery structures, self-organizing structures and related methods)

IT Fluoropolymers, uses
Glass, uses
Polyamines
Polyimides, uses
Polyoxyalkylenes, uses
RL: DEV (Device component use); USES (Uses)
(battery structures, self-organizing structures and related methods)

IT Polymers, uses
RL: DEV (Device component use); USES (Uses)
(block, Li salt-doped; battery structures, self-organizing structures and related methods)

IT Primary batteries
(lithium; battery structures, self-organizing structures and related methods)

IT Intercalation compounds
RL: DEV (Device component use); USES (Uses)
(lithium; battery structures, self-organizing structures and related methods)

IT Azines
Group VA element compounds
RL: DEV (Device component use); USES (Uses)
(phosphazines; battery structures, self-organizing structures and related methods)

IT 7439-95-4, Magnesium, uses
RL: MOA (Modifier or additive use); USES (Uses)
(CoLiO2 doped with; battery structures, self-organizing structures and related methods)

IT 7440-03-1, Niobium, uses 7440-25-7, Tantalum, uses 7440-32-6, Titanium, uses 7440-33-7, Tungsten, uses 12042-37-4, AlLi
RL: MOA (Modifier or additive use); USES (Uses)
(LiFePO4 doped with; battery structures, self-organizing structures and related methods)

IT 7429-90-5, Aluminum, uses
RL: MOA (Modifier or additive use); USES (Uses)
(LiMnO2 doped with; battery structures, self-organizing structures and related methods)

IT 68-12-2, Dmf, uses 75-11-6, Diiodomethane 96-49-1, Ethylene carbonate

105-58-8, DiEthyl carbonate 108-32-7, Propylene carbonate 616-38-6, DimEthyl carbonate 627-31-6, 1,3-Diiodopropane 1307-96-6, Cobalt monoxide, uses 1313-13-9, Manganese dioxide, uses 1313-99-1, Nickel oxide (NiO), uses 1314-62-1, Vanadia, uses 1317-34-6, Manganese oxide mn2o3 1317-35-7, Manganese oxide mn3o4 1335-25-7, Lead oxide 1343-98-2, Silicon hydroxide 1344-43-0, Manganese oxide mno, uses 1345-25-1, Iron oxide feo, uses 7226-23-5 7439-93-2, Lithium, uses 7439-93-2D, Lithium, intercalation compd. 7440-21-3, Silicon, uses 7440-22-4, Silver, uses 7440-31-5, Tin, uses 7440-36-0, Antimony, uses 7440-42-8, Boron, uses 7440-44-0, Carbon, uses 7440-56-4, Germanium, uses 7440-66-6, Zinc, uses 7440-69-9, Bismuth, uses 7631-86-9, Silicon oxide, uses **7782-42-5**, Graphite, uses 9003-53-6, Polystyrene 10043-35-3, Boric acid (H3BO3), uses 10361-43-0, Bismuth hydroxide 12002-78-7 12031-65-1, Lithium nickel oxide linio2 12037-30-8, Vanadium oxide v6o11 12048-27-0, Bili 12057-17-9, Lithium manganese oxide limn2o4 12057-22-6, LiZn 12057-30-6 12057-33-9 12063-07-9, Iron lithium oxide fe2lio4 12162-79-7, Lithium manganese oxide limno2 12190-79-3, Cobalt lithium oxide colio2 12253-44-0 12338-02-2 12651-23-9, Titanium hydroxide 13463-67-7, Titanium oxide, uses 14475-63-9, Zirconium hydroxide Zr(OH)4 15365-14-7, **Iron lithium phosphate** felipo4 18282-10-5, Tin dioxide 21651-19-4, Tin oxide sno 24937-79-9, Polyvinylidene fluoride 25014-41-9, Polyacrylonitrile 25322-68-3, Peo 25322-69-4, Polypropylene oxide 37217-08-6, Lithium titanium oxide liti2o4 39345-91-0, Lead hydroxide 53262-48-9 55575-96-7, Lithium silicide Li13Si4 55608-41-8 56627-44-2 61812-08-6, Lithium silicide Li21Si8 66403-10-9, Lithium boride Li5B4 67070-82-0 71012-86-7, Lithium boride Li7B6 74083-26-4 76036-33-4, Lithium silicide Li12Si7 106494-93-3, Lithium silicide Li21Si5 114778-10-8, Iron lithium sulfate Fe2Li2(SO4)3 144419-56-7, Cobalt lithium magnesium oxide Co0.95LiMg0.05O2 496816-56-9 496816-58-1, **Iron lithium** zirconium **phosphate** Fe0.98LiZr0.02(PO4) 531493-25-1, **Iron lithium** titanium **phosphate** (Fe0.98LiTi0.02(PO4))
RL: DEV (Device component use); USES (Uses)
(battery structures, self-organizing structures and related methods)

IT 99742-70-8, Poly(o-methoxyaniline) 104934-51-2, Poly(3-octylthiophene)
RL: MOA (Modifier or additive use); USES (Uses)
(battery structures, self-organizing structures and related methods)

IT 1303-86-2, Boron oxide (B2O3), uses 1304-76-3, Bismuth oxide (Bi2O3), uses 1314-23-4, Zirconium oxide, uses 1314-56-3, Phosphorus oxide (P2O5), uses 1317-36-8, Lead oxide (PbO), uses 7447-41-8, Lithium chloride, uses 7789-24-4, Lithium fluoride, uses 10377-51-2, Lithium iodide 12057-24-8, Lithia, uses
RL: DEV (Device component use); USES (Uses)
(glass; battery structures, self-organizing structures and related methods)

TI Battery structures, self-organizing structures and related methods

AB An energy storage device includes a first electrode comprising a first material and a second electrode comprising a second material, at least a portion of the first and second materials forming an interpenetrating network when dispersed in an electrolyte, the electrolyte, the first material and the second material are selected so that the first and second materials exert a repelling force on each other when combined. An electrochem. device, includes a first electrode in elec. communication with a first current collector; a second electrode in elec. communication with a second current collector; and an ionically conductive medium in ionic contact with the first and second electrodes, wherein at least a portion of the first and second electrodes form an interpenetrating network and wherein at least one of the first and second electrodes comprises an electrode structure providing two or more pathways to its current collector.

L18 ANSWER 9 OF 29 CAPLUS COPYRIGHT 2003 ACS on STN
ACCESSION NUMBER: 2003:118181 CAPLUS
DOCUMENT NUMBER: 138:156304
TITLE: Battery structures, self-organizing structures, and related methods
INVENTOR(S): Chiang, Yet-Ming; Moorehead, William Douglas; Holman, Richard K.; Viola, Michael S.; Gozdz, Antoni S.; Loxley, Andrew; Riley, Gilbert N., Jr.
PATENT ASSIGNEE(S): Massachusetts Institute of Technology, USA
SOURCE: PCT Int. Appl., 138 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 3
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2003012908	A2	20030213	WO 2002-US23880	20020726
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM				
RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG				
US 2003082446	A1	20030501	US 2001-21740	20011022

PRIORITY APPLN. INFO.:
US 2001-308360P P 20010727
US 2001-21740 A 20011022
US 2000-242124P P 20001020

IT Phosphazenes
RL: DEV (Device component use); USES (Uses)
((methoxyethoxy)ethoxy; battery structures, self-organizing structures, and related methods)
IT Battery anodes
Battery cathodes
Conducting polymers
Embossing
Encapsulants
Ink-jet printing
Lithography
Polymer electrolytes
Primary batteries
Screen printing
(battery structures, self-organizing structures, and related methods)
IT Fluoropolymers, uses
Polyamines
Polyimides, uses
Polyoxyalkylenes, uses
RL: DEV (Device component use); USES (Uses)
(battery structures, self-organizing structures, and related methods)
IT Polyesters, uses
RL: TEM (Technical or engineered material use); USES (Uses)
(battery structures, self-organizing structures, and related methods)
IT Polyesters, uses
RL: TEM (Technical or engineered material use); USES (Uses)
(battery structures, self-organizing structures, and related methods)
IT Glass, uses
RL: DEV (Device component use); USES (Uses)

(bismuth lithium borate; battery structures, self-organizing structures, and related methods)

IT Polymers, uses
RL: DEV (Device component use); USES (Uses)
(block, lithium salt-doped, electrolyte; battery structures, self-organizing structures, and related methods)

IT Electric apparatus
(electrochem.; battery structures, self-organizing structures, and related methods)

IT Polyoxyalkylenes, uses
RL: MOA (Modifier or additive use); USES (Uses)
(lithium complexes, perchlorate- or triflate-contg.; battery structures, self-organizing structures, and related methods)

IT Secondary batteries
(lithium; battery structures, self-organizing structures, and related methods)

IT Composites
(nanocomposite; battery structures, self-organizing structures, and related methods)

IT Printing (nonimpact)
(stenciling; battery structures, self-organizing structures, and related methods)

IT Molding
(tape-casting; battery structures, self-organizing structures, and related methods)

IT Coating process
(web; battery structures, self-organizing structures, and related methods)

IT 7439-95-4, Magnesium, uses
RL: MOA (Modifier or additive use); USES (Uses)
(CoLiO2 doped with; battery structures, self-organizing structures, and related methods)

IT 7440-03-1, Niobium, uses 7440-25-7, Tantalum, uses 7440-32-6, Titanium, uses 7440-33-7, Tungsten, uses
RL: MOA (Modifier or additive use); USES (Uses)
(FeLiPO4 doped with; battery structures, self-organizing structures, and related methods)

IT 7429-90-5, Aluminum, uses
RL: MOA (Modifier or additive use); USES (Uses)
(LiMnO2 doped with; battery structures, self-organizing structures, and related methods)

IT 68-12-2, n,n-Dimethylformamide, uses 75-11-6, Diiodomethane 96-49-1, Ethylene carbonate 105-58-8, DiEthyl carbonate 108-32-7, Propylene carbonate 616-38-6, DimEthyl carbonate 627-31-6, 1,3-Diiodopropane 1307-96-6, Cobalt oxide coo, uses 1313-13-9, Manganese oxide mno2, uses 1313-99-1, Nickel oxide nio, uses 1314-23-4, Zirconium oxide, uses 1314-62-1, Vanadia, uses 1317-34-6, Manganese oxide mn2o3 1317-35-7, Manganese oxide mn3o4 1335-25-7, Lead oxide 1344-43-0, Manganese oxidemno, uses 1345-25-1, Iron oxide feo, uses 7226-23-5 7439-93-2, Lithium, uses 7439-93-2D, Lithium, intercalation compd. 7440-21-3, Silicon, uses 7440-22-4, Silver, uses 7440-31-5, Tin, uses 7440-36-0, Antimony, uses 7440-42-8, Boron, uses 7440-44-0, Carbon, uses 7440-56-4, Germanium, uses 7440-66-6, Zinc, uses 7440-69-9, Bismuth, uses **7782-42-5**, Graphite, uses 9002-84-0, Ptfe 9003-53-6, Polystyrene 10361-43-0, Bismuth hydroxide 12002-78-7 12031-65-1, Lithium nickel oxide linio2 12037-30-8, Vanadium oxide v6o11 12042-37-4, Alli 12048-27-0, Bili 12057-17-9, Lithium manganese oxide limn2o4 12057-22-6, Lizn 12057-30-6 12057-33-9 12063-07-9, Iron lithium oxide fe2lio4 12162-79-7, Lithium manganese oxide limno2 12190-79-3, Cobalt lithium oxide colio2 12253-44-0 12338-02-2 12651-23-9, Titanium hydroxide 13463-67-7, Titanium oxide, uses 14475-63-9, Zirconium hydroxide 15365-14-7, **Iron**

lithium phosphate felipo4 18282-10-5, Tin dioxide 21324-40-3, Lithium hexafluorophosphate 21651-19-4, Tin oxide sno 24937-79-9, Polyvinylidene fluoride 25014-41-9, Polyacrylonitrile 25322-68-3, Peo 25322-69-4, Polypropylene oxide 37217-08-6, Lithium titanium oxide liti2o4 39345-91-0, Lead hydroxide 50851-57-5 53262-48-9 53640-36-1 55575-96-7, Lithium silicide Li13Si4 55608-41-8 56627-44-2 61812-08-6, Lithium silicide Li21Si8 66403-10-9, Lithium boride (Li5B4) 67070-82-0 71012-86-7, Lithium boride (Li7B6) 74083-26-4 76036-33-4, Lithium silicide Li12Si7 106494-93-3, Lithium silicide Li21Si5 126213-51-2, Poly(3,4-ethylenedioxythiophene) 136511-06-3, MEEP 144419-56-7, Cobalt lithium magnesium oxide Co0.95LiMg0.05O2 496816-56-9 496816-57-0, Cobalt lithium magnesium oxide (Co0.95Li0.95Mg0.05O1.9) 496816-58-1, **Iron lithium** zirconium **phosphate** (Fe0.98LiZr0.02(PO4))
RL: DEV (Device component use); USES (Uses)
(battery structures, self-organizing structures, and related methods)

IT 76-05-1, Trifluoroacetic acid, uses 104-15-4, Toluene sulfonic acid, uses 7647-01-0, Hydrochloric acid, uses 57534-41-5, Zonyl FSN
RL: MOA (Modifier or additive use); USES (Uses)
(battery structures, self-organizing structures, and related methods)

IT **9002-88-4**, Polyethylene 11099-11-9, Vanadium oxide **25038-59-9**, Mylar, uses
RL: TEM (Technical or engineered material use); USES (Uses)
(battery structures, self-organizing structures, and related methods)

IT 99742-70-8, Poly(o-methoxyaniline) 104934-51-2, Poly(3-octylthiophene)
RL: TEM (Technical or engineered material use); USES (Uses)
(coating; battery structures, self-organizing structures, and related methods)

IT 7440-50-8, Copper, uses
RL: DEV (Device component use); USES (Uses)
(current collector; battery structures, self-organizing structures, and related methods)

IT 7791-03-9, Lithium perchlorate 33454-82-9, Lithium triflate
RL: MOA (Modifier or additive use); USES (Uses)
(electrolyte, cog. polyethylene oxide; battery structures, self-organizing structures, and related methods)

IT 1303-86-2, Boron oxide b2o3, uses 1304-76-3, Bismuth oxide bi2o3, uses 1314-56-3, Phosphorus pentoxide, uses 1317-36-8, Lead oxide pbo, uses 7447-41-8, Lithium chloride, uses 7631-86-9, Silica, uses 7789-24-4, Lithium fluoride, uses 10377-51-2, Lithium iodide 12057-24-8, Lithia, uses
RL: DEV (Device component use); USES (Uses)
(glass; battery structures, self-organizing structures, and related methods)

IT 7439-93-2D, Lithium, polyethylene oxide complexes 25322-68-3D, Peo, lithium complexes
RL: MOA (Modifier or additive use); USES (Uses)
(perchlorate- or triflate-contg.; battery structures, self-organizing structures, and related methods)

TI Battery structures, self-organizing structures, and related methods

AB An energy storage device includes a first electrode comprising a first material and a second electrode comprising a second material, at least a portion of the first and second materials forming an interpenetrating network when dispersed in an electrolyte, the electrolyte, the first material and the second material are selected so that the first and second materials exert a repelling force on each other when combined. An electrochem. device, includes a first electrode in elec. communication with a first current collector; a second electrode in elec. communication with a second current collector; and an ionically conductive medium in ionic contact with the first and second electrodes, wherein at least a portion of the first and second electrodes form an interpenetrating

network and wherein at least one of the first and second electrodes comprises an electrode structure providing two or more pathways to its current collector.

L18 ANSWER 10 OF 29 CAPLUS COPYRIGHT 2003 ACS on STN
ACCESSION NUMBER: 2003:97868 CAPLUS
DOCUMENT NUMBER: 138:140078
TITLE: Alkali/transition metal halo- and hydroxy-phosphates and related electrode active materials
INVENTOR(S): Barker, Jeremy; Saidi, M. Yazid; Swoyer, Jeffrey L.
PATENT ASSIGNEE(S): UK
SOURCE: U.S. Pat. Appl. Publ., 22 pp., Cont.-in-part of U.S. 6,387,568.
CODEN: USXXCO
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 3
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 2003027049	A1	20030206	US 2001-14822	20011026
US 6387568	B1	20020514	US 2000-559861	20000427
TW 503596	B	20020921	TW 2001-90109979	20010426
US 2002168573	A1	20021114	US 2002-133091	20020426
WO 2003038930	A2	20030508	WO 2002-US33510	20021018

W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM
RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG

PRIORITY APPLN. INFO.: US 2000-559861 A2 20000427
US 2001-14822 A 20011026

IT Battery cathodes
Hydrothermal reactions
(alkali/transition metal halo- and hydroxy-phosphates and related electrode active materials)
IT Chalcogenides
Olivine-group minerals
Oxides (inorganic), uses
RL: DEV (Device component use); USES (Uses)
(alkali/transition metal halo- and hydroxy-phosphates and related electrode active materials)
IT Carbonaceous materials (technological products)
RL: MOA (Modifier or additive use); USES (Uses)
(alkali/transition metal halo- and hydroxy-phosphates and related electrode active materials)
IT Reduction
(carbothermal; alkali/transition metal halo- and hydroxy-phosphates and related electrode active materials)
IT Phosphates, uses
RL: DEV (Device component use); USES (Uses)
(halide; alkali/transition metal halo- and hydroxy-phosphates and related electrode active materials)
IT Secondary batteries
(lithium; alkali/transition metal halo- and hydroxy-phosphates and

related electrode active materials)

IT Halides
RL: DEV (Device component use); USES (Uses)
(phosphates; alkali/transition metal halo- and hydroxy-phosphates and related electrode active materials)

IT 7440-44-0, Carbon, uses **7782-42-5**, Graphite, uses 77641-62-4, Nasicon
RL: DEV (Device component use); USES (Uses)
(alkali/transition metal halo- and hydroxy-phosphates and related electrode active materials)

IT 52934-02-8P, Cobalt lithium fluoride phosphate 52934-08-4P, Lithium nickel fluoride phosphate 257892-19-6P, Sodium vanadium fluoride phosphate (Na3V2F3(PO4)2) 477779-87-6P, Sodium vanadium fluoride phosphate NaVFPO4 477779-89-8P, Lithium sodium vanadiumfluoride phosphate (Li0.95Na0.05VF(PO4)) 484039-84-1P, Cobalt lithium fluoride phosphate (CoLi2F(PO4)) 484039-86-3P, **Iron lithium** fluoride **phosphate** (FeLi2F(PO4)) 484039-88-5P 484039-91-0P, Lithium nickel fluoride phosphate (Li2NiF(PO4)) 484039-93-2P, **Iron lithium** fluoride **phosphate**
484039-95-4P, Lithium manganese fluoride phosphate (Li2MnF(PO4))
484039-97-6P, Copper lithium fluoride phosphate (CuLi2F(PO4))
484040-01-9P, **Iron lithium** magnesium fluoride **phosphate** (Fe0.9Li1.25Mg0.1F0.25(PO4)) 484040-04-2P, Sodium vanadium fluoride phosphate (Na1.2VF1.2(PO4)) 484040-06-4P, Chromium sodium fluoride phosphate 484040-08-6P, Manganese sodium fluoride phosphate (MnNaF(PO4)) 484040-10-0P, Cobalt sodium fluoride phosphate (CoNaF(PO4)) 484040-12-2P, Lithium sodium vanadiumfluoride phosphate (Li0.1Na0.9VF(PO4)) 484040-13-3P, Sodium vanadium hydroxide phosphate NaVOHPO4 484040-14-4P, **Iron lithium** fluoride **phosphate** (Fe2Li4F(PO4)3)) 484040-15-5P, Lithium vanadium fluoride phosphate (Li4V2F(PO4)3)) 484040-20-2P, Lithium manganese fluoride phosphate (Li5Mn2F2(PO4)3) 484040-22-4P, Lithium vanadium fluoride phosphate (Li6V2F(PO4)3) 484040-25-7P, Chromium lithium sodium fluoride phosphate silicate (CrLiNa0.2F(PO4)0.8(SiO4)0.2) 484040-27-9P 484040-28-0P 493025-03-9P, Lithium manganese fluoride phosphate 493025-04-0P, Copper lithium fluoride phosphate
RL: DEV (Device component use); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)
(alkali/transition metal halo- and hydroxy-phosphates and related electrode active materials)

TI Alkali/transition metal halo- and hydroxy-phosphates and related electrode active materials

AB An electroactive material comprises: AaMb(XY4)cZd, wherein (a) A is selected from the group consisting of Li, Na, and/or K, and a = 0-8; (b) M is .gtoreq.1 metal, comprising .gtoreq.1 metal which is capable of undergoing oxidn. to a higher valence state, and b = 1-3; (c) XY4 is selected from the group consisting of X'O4-xY'x, X'O4-yY'2y, X''S4, and mixts. thereof, where X' is P, As, Sb, Si, and/or Ge; X'' is P, As, Sb, Si, and/or Ge; Y' is halogen, x = 0-3; and y = 0-4; and c = 0-3; (d) Z is OH and/or halogen, d = 0-6; and wherein M, X, Y, Z, a, b, c, d, x, and y are selected so as to maintain the electroneutrality of the compd. Preferred embodiments include those having where c=1, those where c=2, and those where c=3. Preferred embodiments include those where a .ltoreq.1 and c=1, those where a=2 and c=1, and those where a.gtoreq.3 and c=3. This invention also provides electrodes comprising an electrode active material of this invention, and batteries that comprise a first electrode having an electrode active material of this invention; a second electrode having a compatible active material; and an electrolyte.

L18 ANSWER 11 OF 29 CAPLUS COPYRIGHT 2003 ACS on STN
ACCESSION NUMBER: 2003:58409 CAPLUS
DOCUMENT NUMBER: 138:124985

TITLE: secondary nonaqueous electrolyte battery
INVENTOR(S): Miyaki, Yukio
PATENT ASSIGNEE(S): Sony Corporation, Japan
SOURCE: PCT Int. Appl., 25 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2003007405	A1	20030123	WO 2002-JP7011	20020710
W: CN, KR, US				
RW: AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, SK, TR				
JP 2003031211	A2	20030131	JP 2001-209727	20010710

PRIORITY APPLN. INFO.: JP 2001-209727 A 20010710

IT Battery anodes
(carbonaceous anodes contg. tin alloys and polymers for secondary lithium batteries)

IT Fluoropolymers, uses
Styrene-butadiene rubber, uses
RL: DEV (Device component use); USES (Uses)
(carbonaceous anodes contg. tin alloys and polymers for secondary lithium batteries)

IT 24937-79-9, Poly(vinylidene fluoride)
RL: DEV (Device component use); USES (Uses)
(carbonaceous anodes contg. tin alloys and polymers for secondary lithium batteries)

IT 12190-79-3, Cobalt lithium oxide (CoLiO2) 15365-14-7 253776-82-8, Aluminum cobalt lithium nickel oxide (Al0.01Co0.19LiNi0.8O2) 474902-99-3, **Iron lithium** manganese **phosphate** (Fe0.35LiMn0.65(PO4))
RL: DEV (Device component use); USES (Uses)
(cathodes in secondary lithium batteries using tin alloy contg. carbonaceous anodes)

IT 12787-61-0 70993-37-2 489428-73-1 489428-74-2 489428-75-3 489428-76-4 489428-77-5 489428-78-6 489428-79-7 489428-80-0 489428-81-1 489428-82-2 489428-83-3 489428-84-4 489428-85-5 489428-86-6 489428-87-7 489428-88-8 489428-89-9
RL: DEV (Device component use); USES (Uses)
(compns. of tin alloys in carbonaceous anodes for secondary lithium batteries)

IT 9003-55-8
RL: DEV (Device component use); USES (Uses)
(styrene-butadiene rubber, carbonaceous anodes contg. tin alloys and polymers for secondary lithium batteries)

IT **7782-42-5**, Graphite, uses
RL: DEV (Device component use); USES (Uses)
(synthetic; carbonaceous anodes contg. tin alloys and polymers for secondary lithium batteries)

TI secondary nonaqueous electrolyte battery

AB A secondary Li battery uses an anode contg. a carbonaceous material, a polymer, and a Sn compd. SnMxM'yM"z, where M = Co and/or Cu; M' = Cr, Fe, Mn, Nb, Mo, W, B, and/or P; M" = In, Ag, Zn, and/or Al; 0.1 <x .ltoreq.2, 0 <y .ltoreq.2, and 0 <z .ltoreq.1.

REFERENCE COUNT: 7 THERE ARE 7 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L18 ANSWER 12 OF 29 CAPLUS COPYRIGHT 2003 ACS on STN
ACCESSION NUMBER: 2003:42884 CAPLUS

DOCUMENT NUMBER: 138:92874
TITLE: Alkali/transition metal halo- and hydroxy-phosphates and related electrode active materials
INVENTOR(S): Barker, Jeremy; Saidi, M. Yazid; Swoyer, Jeffery L.
PATENT ASSIGNEE(S): UK
SOURCE: U.S. Pat. Appl. Publ., 22 pp., Cont.-in-part of U. S. 6,387,568.
CODEN: USXXCO
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 3
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 2003013019	A1	20030116	US 2001-45685	20011107
US 6387568	B1	20020514	US 2000-559861	20000427
TW 503596	B	20020921	TW 2001-90109979	20010426
US 2002168573	A1	20021114	US 2002-133091	20020426

PRIORITY APPLN. INFO.: US 2000-559861 A2 20000427

IT Battery cathodes
NASICONs
(alkali/transition metal halo- and hydroxy-phosphates and related electrode active materials)

IT Carbonaceous materials (technological products)
Oxides (inorganic), uses
RL: DEV (Device component use); USES (Uses)
(alkali/transition metal halo- and hydroxy-phosphates and related electrode active materials)

IT Secondary batteries
(lithium; alkali/transition metal halo- and hydroxy-phosphates and related electrode active materials)

IT Chalcogenides
RL: DEV (Device component use); USES (Uses)
(metal; alkali/transition metal halo- and hydroxy-phosphates and related electrode active materials)

IT 7440-44-0, Carbon, uses **7782-42-5**, Graphite, uses 484039-84-1, Cobalt lithium fluoride phosphate (CoLi2F(PO4)) 484039-86-3, **Iron lithium** fluoride **phosphate** (FeLi2F(PO4)) 484039-88-5
RL: DEV (Device component use); USES (Uses)
(alkali/transition metal halo- and hydroxy-phosphates and related electrode active materials)

IT 52934-02-8P, Cobalt lithium fluoride phosphate 477779-87-6P, Sodium vanadium fluoride phosphate NaVFPO4 484039-91-0P, Lithium nickel fluoride phosphate (Li2NiF(PO4)) 484039-93-2P, **Iron lithium** fluoride **phosphate** 484039-95-4P, Lithium manganese fluoride phosphate (Li2MnF(PO4)) 484039-97-6P, Copper lithium fluoride phosphate (CuLi2F(PO4)) 484040-01-9P 484040-04-2P, Sodium vanadium fluoride phosphate (Na1.2VF1.2(PO4)) 484040-06-4P, Chromium sodium fluoride phosphate 484040-08-6P, Manganese sodium fluoride phosphate (MnNaF(PO4)) 484040-10-0P, Cobalt sodium fluoride phosphate (CoNaF(PO4)) 484040-12-2P 484040-13-3P, Sodium vanadium hydroxide phosphate (NaV(OH)(PO4)) 484040-14-4P, **Iron lithium** fluoride **phosphate** (Fe2Li4F(PO4)3) 484040-15-5P, Lithium vanadium fluoride phosphate (Li4V2F(PO4)3) 484040-20-2P, Lithium manganese fluoride phosphate (Li5Mn2F2(PO4)3) 484040-22-4P, Lithium vanadium fluoride phosphate (Li6V2F(PO4)3) 484040-25-7P 484040-27-9P 484040-28-0P
RL: DEV (Device component use); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)
(alkali/transition metal halo- and hydroxy-phosphates and related

electrode active materials)

TI Alkali/transition metal halo- and hydroxy-phosphates and related electrode active materials

AB Electrode active materials comprise lithium or other alkali metals, a transition metal, a phosphate or similar moiety, and a halogen or hydroxyl moiety. Such electrode actives include those of the formula: AaMb(XY4)cZd wherein (a) A is selected from the group consisting of Li, Na, K, and mixts. thereof, and 0<a.ltoreq.6; (b) M comprises one or more metals, comprising at least one metal which is capable of undergoing oxidn. to a higher valence state, and 1.ltoreq.b.ltoreq.3; (c) XY4 is selected from the group consisting of X'O4-xY'Xx, X'O4-yY'2y , X''S4, and mixts. thereof, where X' is P, As, Sb, Si, Ge, S, and mixts. thereof; X'' is P, As, Sb, Si, Ge and mixts. thereof; Y' is halogen; 0.ltoreq.x<3; and 0<y<4; and 0<c.ltoreq.3; (d) Z is OH, halogen, or mixts. thereof, and 0<d.ltoreq.6; and wherein M, X, Y, Z, a, b, c, d, x and y are selected so as to maintain electroneutrality of the compd. In a preferred embodiment, M comprises two or more transition metals from Groups 4 to 11 of the Periodic Table. In another preferred embodiment, M comprises M'1-mM''m, where M' is at least one transition metal from Groups 4 to 11 of the Periodic Table; M'' is at least one element from Groups 2, 3, 12, 13, or 14 of the Periodic Table, and 0<m<1. Preferred embodiments include those having where c=1, those where c=2, and those where c=3. Preferred embodiments include those where a.ltoreq.1 and c=1, those where a=2 and c=1, and those where a.gtoreq.3 and c=3. This invention also provides electrodes comprising an electrode active material of this invention, and batteries that comprise a first electrode having an electrode active material of this invention; a second electrode having a compatible active material; and an electrolyte.

L18 ANSWER 13 OF 29 CAPLUS COPYRIGHT 2003 ACS on STN
ACCESSION NUMBER: 2003:40437 CAPLUS
DOCUMENT NUMBER: 138:109577
TITLE: Solid secondary lithium battery
INVENTOR(S): Ogata, Naoya; Sata, Tsutomu
PATENT ASSIGNEE(S): Torekion K. K., Japan
SOURCE: Jpn. Kokai Tokkyo Koho, 5 pp.
CODEN: JKXXAF
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2003017121	A2	20030117	JP 2001-200782	20010702

PRIORITY APPLN. INFO.: JP 2001-200782 20010702

IT Secondary batteries
(lithium; compns. and structure of secondary Li batteries contg. Li-intercalating electrodes and solid polymer electrolyte solns.)

IT **7782-42-5**, Graphite, uses 12031-95-7, Lithium titanium oxide (Li4Ti5O12)
RL: DEV (Device component use); USES (Uses)
(anode; compns. and structure of secondary Li batteries contg. Li-intercalating electrodes and solid polymer electrolyte solns.)

IT 12190-79-3, Cobalt lithium oxide (CoLiO2) 15365-14-7, **Iron lithium phosphate** (LiFePO4)
RL: DEV (Device component use); USES (Uses)
(cathode; compns. and structure of secondary Li batteries contg. Li-intercalating electrodes and solid polymer electrolyte solns.)

IT 79-10-7D, Acrylic acid, polyoxyalkylene derivs. 115383-11-4
RL: DEV (Device component use); USES (Uses)
(compns. and structure of secondary Li batteries contg.

Li-intercalating electrodes and solid polymer electrolyte solns.)

IT 82113-65-3, Bis(trifluoromethane sulfonyl) imide 90076-65-6
RL: DEV (Device component use); USES (Uses)
(salt, electrolyte; compns. and structure of secondary Li batteries contg. Li-intercalating electrodes and solid polymer electrolyte solns.)

IT 6222-20-4 486459-47-6
RL: DEV (Device component use); USES (Uses)
(solvent, electrolyte; compns. and structure of secondary Li batteries contg. Li-intercalating electrodes and solid polymer electrolyte solns.)

TI Solid secondary lithium battery

AB The battery has a Li or Li-intercalating anode, a Li-intercalating cathode, and a solid electrolyte in between; where the electrolyte is a soln. contg. a Li salt in a room temp. solid arom. carbonate. Another type of the battery has a solid polymer electrolyte contg. a crosslinked polyether polymer matrix and the above soln. as continuous phase in the matrix.

L18 ANSWER 14 OF 29 CAPLUS COPYRIGHT 2003 ACS on STN
ACCESSION NUMBER: 2002:734259 CAPLUS
DOCUMENT NUMBER: 137:265592
TITLE: secondary lithium battery
INVENTOR(S): Fujita, Shigeru; Akashi, Hiroyuki; Adachi, Momoe; Shibamoto, Goro
PATENT ASSIGNEE(S): Sony Corp., Japan
SOURCE: Jpn. Kokai Tokkyo Koho, 13 pp.
CODEN: JKXXAF
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2002279989	A2	20020927	JP 2001-77086	20010316

PRIORITY APPLN. INFO.: JP 2001-77086 20010316

IT Battery cathodes
(compns. of oxide cathodes for secondary lithium batteries with lithium intercalating and depositing anodes)

IT Battery anodes
(lithium intercalating and depositing anodes for secondary lithium batteries with oxide cathodes)

IT Carbonaceous materials (technological products)
RL: DEV (Device component use); USES (Uses)
(lithium intercalating and depositing anodes for secondary lithium batteries with oxide cathodes)

IT Secondary batteries
(lithium; secondary lithium batteries with oxide cathodes and lithium intercalating and depositing anodes)

IT 12057-17-9, Lithium manganese oxide (LiMn2O4) 12190-79-3, Cobalt lithium oxide (CoLiO2) 15365-14-7, **Iron lithium phosphate** (FeLiPO4) 113066-89-0, Cobalt lithium nickel oxide (Co0.2LiNi0.8O2) 213467-46-0, **Iron lithium** manganese **phosphate** [FeLi2Mn(PO4)2]
RL: DEV (Device component use); USES (Uses)
(compns. of oxide cathodes for secondary lithium batteries with lithium intercalating and depositing anodes)

IT 7429-90-5, Aluminum, uses 7439-92-1, Lead, uses 7439-95-4, Magnesium, uses 7440-21-3, Silicon, uses 7440-22-4, Silver, uses 7440-31-5, Tin, uses 7440-36-0, Antimony, uses 7440-38-2, Arsenic, uses 7440-42-8, Boron, uses 7440-43-9, Cadmium, uses 7440-55-3, Gallium,

uses 7440-56-4, Germanium, uses 7440-58-6, Hafnium, uses 7440-65-5, Yttrium, uses 7440-66-6, Zinc, uses 7440-67-7, Zirconium, uses 7440-69-9, Bismuth, uses 7440-74-6, Indium, uses **7782-42-5**, Graphite, uses
RL: DEV (Device component use); USES (Uses)
(lithium intercalating and depositing anodes for secondary lithium batteries with oxide cathodes)

TI secondary lithium battery

AB The battery has a Li intercalating and depositing anode and a oxide cathode active mass contg. Li, P and .gtoreq.1 of Fe, Mn and Co. The cathode may also contain a 2nd oxide active mass contg. Li and .gtoreq.1 of Co, Ni, and Mn. The anode active mass is selected from Li intercalating carbonaceous materials and metals, semiconductors, alloys, and compds. capable of alloying with Li.

L18 ANSWER 15 OF 29 CAPLUS COPYRIGHT 2003 ACS on STN
ACCESSION NUMBER: 2002:716669 CAPLUS
DOCUMENT NUMBER: 137:250290
TITLE: Cathode compositions and their use, particularly in batteries
INVENTOR(S): Ravet, Nathalie; Armand, Michel
PATENT ASSIGNEE(S): Universite de Montreal, Can.; Centre National de la Recherche Scientifique
SOURCE: PCT Int. Appl., 16 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: French
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2002073716	A2	20020919	WO 2002-CA341	20020313

W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM
RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG

PRIORITY APPLN. INFO.: CA 2001-2340798 A 20010313

IT Carbon black, uses
RL: TEM (Technical or engineered material use); USES (Uses)
(as electronic conductor in battery cathode)

IT Battery cathodes
(compn. and use of)

IT Battery electrolytes
(for cathode consisting of mixed oxide and mixed phosphate)

IT Polyesters, uses
Polyolefins
RL: TEM (Technical or engineered material use); USES (Uses)
(in battery electrolyte)

IT Primary batteries
Secondary batteries
(with cathode consisting of mixed oxide and mixed phosphate)

IT Lithium alloy, base
RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)
(anode in combination with cathode consisting of mixed oxide and mixed

phosphate)
IT 72785-69-4
RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)
(anode in combination with cathode consisting of mixed oxide and mixed phosphate)
IT 7429-90-5, Aluminum, uses
RL: DEV (Device component use); USES (Uses)
(as current collector in battery cathode)
IT **7782-42-5**, Graphite, uses
RL: TEM (Technical or engineered material use); USES (Uses)
(as electronic conductor in battery cathode)
IT 96-48-0, .gamma.-Butyrolactone 872-50-4, N-Methylpyrrolidone, uses 7440-44-0, Carbon, uses
RL: TEM (Technical or engineered material use); USES (Uses)
(coating on battery cathode surface)
IT 7439-93-2, Lithium, uses
RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)
(for anode in combination with cathode consisting of mixed oxide and mixed phosphate)
IT 12022-46-7, Iron lithium oxide (LiFeO2) 12031-95-7, Lithium titanium oxide (Li4Ti5O12) 166187-76-4, Lithium manganese oxide (Li2Mn2O4)
RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)
(in anode in combination with cathode consisting of mixed oxide and mixed phosphate)
IT 12057-17-9, Lithium manganese oxide (LiMn2O4) 12190-79-3, Lithium cobalt oxide (LiCoO2) 15365-14-7, **Iron lithium phosphate** (LiFePO4)
RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)
(in battery cathodes)
IT 1344-28-1, Alumina, uses 7439-93-2D, Lithium, salts 7631-86-9, Silica, uses 12003-67-7, Lithium aluminate (LiAlO2) 13463-67-7, Titania, uses
RL: TEM (Technical or engineered material use); USES (Uses)
(in battery electrolyte)
TI Cathode compositions and their use, particularly in batteries
AB The invention relates to a pos. electrode compn. contg. .gtoreq.1 mixed oxide with a spinel or lamellar structure having general formula Li1-xM1-yAaO2-fFf, and .gtoreq.1 mixed phosphate having a general formula Li1-zFenMnmPO4 (where M = Co, Ni, Mn; A = Mg, Zn, Al, Fe, Cr, Co, Mn, Ni, Zn, Ga; 0 .ltoreq. x, y, a, f .ltoreq. 1; 0 .ltoreq. z; n, m .ltoreq. 1) and which operates in the 2.5-4.3 V range with a voltage plateau located between the 2 values.

L18 ANSWER 16 OF 29 CAPLUS COPYRIGHT 2003 ACS on STN
ACCESSION NUMBER: 2002:409156 CAPLUS
DOCUMENT NUMBER: 136:404301
TITLE: Intermetallic anodes for nonaqueous lithium cells and batteries
INVENTOR(S): Thackeray, Michael M.; Vaughey, John T.; Johnson, Christopher S.; Fransson, Linda M. L.; Edstrom, Ester Kristina; Henriksen, Gary
PATENT ASSIGNEE(S): USA
SOURCE: U.S. Pat. Appl. Publ., 22 pp.
CODEN: USXXCO
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 2002064704	A1	20020530	US 2001-8885	20011108

PRIORITY APPLN. INFO.: US 2000-247404P P 20001110

IT Battery anodes
(intermetallic anodes for nonaq. lithium cells and batteries)

IT Intermetallic compounds
RL: DEV (Device component use); USES (Uses)
(intermetallic anodes for nonaq. lithium cells and batteries)

IT Secondary batteries
(lithium; intermetallic anodes for nonaq. lithium cells and batteries)

IT 7440-02-0, Nickel, uses 7440-50-8, Copper, uses
RL: DEV (Device component use); USES (Uses)
(current collector; intermetallic anodes for nonaq. lithium cells and batteries)

IT 7440-44-0, Carbon, uses **7782-42-5**, Graphite, uses
RL: MOA (Modifier or additive use); USES (Uses)
(grain growth inhibitor; intermetallic anodes for nonaq. lithium cells and batteries)

IT 7439-93-2, Lithium, uses 12031-65-1, Lithium nickel oxide linio2 12057-17-9, Lithium manganese oxide limn2o4 12162-79-7, Lithium manganese oxide limno2 12190-79-3, Cobalt lithium oxide colio2 15365-14-7, **Iron lithium phosphate** felipo4
RL: DEV (Device component use); USES (Uses)
(intermetallic anodes for nonaq. lithium cells and batteries)

IT 12019-69-1P 428867-64-5P 428867-65-6P 428867-67-8P 428867-69-0P
RL: DEV (Device component use); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)
(intermetallic anodes for nonaq. lithium cells and batteries)

TI Intermetallic anodes for nonaqueous lithium cells and batteries

AB A method of operating an electrochem. cell is disclosed. The cell has an intermetallic neg. electrode of Cu6-xMxSn5, wherein x is .ltoreq.3 and M is one or more metals including Si and a pos. electrode contg. Li in which Li is shuttled between the pos. electrode and the neg. electrode during charge and discharge to form a lithiated intermetallic neg. electrode during charge. The voltage of the electrochem. cell is controlled during the charge portion of the charge-discharge cycles so that the potential of the lithiated intermetallic neg. electrode in the fully charged electrochem. cell is less than 0.2 V but greater than 0 V vs. metallic lithium.

L18 ANSWER 17 OF 29 CAPLUS COPYRIGHT 2003 ACS on STN
ACCESSION NUMBER: 2002:294036 CAPLUS
DOCUMENT NUMBER: 136:312606
TITLE: Method of fabrication of high performance lithium or lithium ion batteries
INVENTOR(S): Dai, Dongli
PATENT ASSIGNEE(S): E.I. Dupont De Nemours and Company, USA
SOURCE: PCT Int. Appl., 30 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2002031905	A2	20020418	WO 2001-US30892	20011003
WO 2002031905	A3	20021003		

W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR,

LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PH, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM
RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG

AU 2002011378	A5	20020422	AU 2002-11378	20011003
EP 1328996	A2	20030723	EP 2001-979407	20011003
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR				
US 2003003369	A1	20030102	US 2002-223963	20020820

PRIORITY APPLN. INFO.:

US 2000-684206	A	20001006
US 2000-199700P	P	20000426
US 2000-205027P	P	20000518
WO 2001-US30892	W	20011003

OTHER SOURCE(S): MARPAT 136:312606

IT Ionomers
RL: DEV (Device component use); USES (Uses)
(fluorinated; method of fabrication of high performance lithium or lithium ion batteries)

IT Ionomers
RL: DEV (Device component use); USES (Uses)
(fluoropolymers, sulfo-contg.; method of fabrication of high performance lithium or lithium ion batteries)

IT Polymer electrolytes
(gelled; method of fabrication of high performance lithium or lithium ion batteries)

IT Fluoropolymers, uses
RL: DEV (Device component use); USES (Uses)
(ionomers, sulfo-contg.; method of fabrication of high performance lithium or lithium ion batteries)

IT Primary batteries
Secondary batteries
(lithium; method of fabrication of high performance lithium or lithium ion batteries)

IT Battery cathodes
(method of fabrication of high performance lithium or lithium ion batteries)

IT Carbon fibers, uses
Polyethers, uses
Polyolefins
RL: DEV (Device component use); USES (Uses)
(method of fabrication of high performance lithium or lithium ion batteries)

IT Polymers, uses
RL: DEV (Device component use); USES (Uses)
(solvent swellable; method of fabrication of high performance lithium or lithium ion batteries)

IT 7631-86-9, Fumed silica, uses
RL: DEV (Device component use); USES (Uses)
(colloidal; method of fabrication of high performance lithium or lithium ion batteries)

IT 96-49-1, Ethylene carbonate 105-58-8, Diethyl carbonate 108-32-7, Propylene carbonate 616-38-6, Dimethyl carbonate **7782-42-5**, Graphite, uses 9011-17-0, Hexafluoropropylene-vinylidene fluoride copolymer 11099-11-9, Vanadium oxide 12031-65-1, Lithium nickel oxide linio2 12057-17-9, Lithium manganese oxide limn2o4 12162-79-7, Lithium manganese oxide limno2 12190-79-3, Cobalt lithium oxide colio2 15365-14-7, **Iron lithium phosphate** felipo4 35064-83-6, Perfluoromethyl vinyl ether-vinylidene fluoride copolymer 68841-86-1, Perfluoropropyl vinyl ether-vinylidene fluoride copolymer 90076-65-6 91891-38-2 135573-53-4, Cobalt lithium nickel oxide

CoO-1LiNiO-1O2 204450-96-4, Chromium lithium manganese oxide 412015-20-4
RL: DEV (Device component use); USES (Uses)
(method of fabrication of high performance lithium or lithium ion batteries)

IT 84-74-2, Dibutyl phthalate
RL: MOA (Modifier or additive use); USES (Uses)
(method of fabrication of high performance lithium or lithium ion batteries)

TI Method of fabrication of high performance lithium or lithium ion batteries

AB Graphite sheeting having a thickness of less than 250 .mu.m and in-plane cond. of at least 100 S/cm when employed as a cathode current collector in a lithium or lithium ion cell contg. a fluorinated lithium imide or methide electrolyte salt imparts high thermal resistance, excellent electrochem. stability, and surprisingly high capacity retention at high rates of discharge.

L18 ANSWER 18 OF 29 CAPLUS COPYRIGHT 2003 ACS on STN
ACCESSION NUMBER: 2002:291865 CAPLUS
DOCUMENT NUMBER: 136:312584
TITLE: Method for preparation of cathode active material for nonaqueous lithium secondary battery
INVENTOR(S): Sato, Atsushi; Kuyama, Junji; Fukushima, Yuzuru; Hosoya, Mamoru
PATENT ASSIGNEE(S): Sony Corp., Japan
SOURCE: Eur. Pat. Appl., 15 pp.
CODEN: EPXXDW
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
EP 1198019	A2	20020417	EP 2001-123899	20011005
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO				
JP 2002117847	A2	20020419	JP 2000-308299	20001006
CN 1348226	A	20020508	CN 2001-130348	20010930
US 2002106562	A1	20020808	US 2001-970573	20011004

PRIORITY APPLN. INFO.: JP 2000-308299 A 20001006

IT Secondary batteries
(lithium; method for prepn. of cathode active material for nonaq. lithium secondary battery)

IT Battery cathodes
Battery electrolytes
(method for prepn. of cathode active material for nonaq. lithium secondary battery)

IT Fluoropolymers, uses
RL: MOA (Modifier or additive use); USES (Uses)
(method for prepn. of cathode active material for nonaq. lithium secondary battery)

IT 10028-23-6, Phosphoric acid, iron(2+) salt (2:3)octahydrate 10377-52-3, Trilithium phosphate 14940-41-1, Iron phosphate fe3(po4)2 31096-55-6, Phosphoric acid, iron(2+) salt (2:3) hydrate
RL: CPS (Chemical process); PEP (Physical, engineering or chemical process); PROC (Process)
(method for prepn. of cathode active material for nonaq. lithium secondary battery)

IT 108-32-7, Propylene carbonate 616-38-6, Dimethyl carbonate **7782-42-5**, Graphite, uses 21324-40-3, Lithium hexafluorophosphate

RL: DEV (Device component use); USES (Uses)
(method for prepn. of cathode active material for nonaq. lithium secondary battery)

IT 198782-39-7P, **Iron lithium phosphate** (FeLi0-1(PO4))
RL: DEV (Device component use); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)
(method for prepn. of cathode active material for nonaq. lithium secondary battery)

IT 9011-17-0, Hexafluoropropylene-vinylidene fluoride copolymer 24937-79-9, Pvdf
RL: MOA (Modifier or additive use); USES (Uses)
(method for prepn. of cathode active material for nonaq. lithium secondary battery)

TI Method for preparation of cathode active material for nonaqueous lithium secondary battery

AB A nonaq. electrolyte cell includes a cathode contg. a cathode active material, which is mainly composed of a compd. represented by the general formula LixFePO4, where 0 < x .ltoreq. 1, with the molar ratio of Li3PO4 to a compd. represented by the general formula LixFePO4, which ratio is represented by Li3PO4/LiFePO4, being Li3PO4/LiFePO4 .ltoreq. 6.67 .times. 10-2. Starting materials for the synthesis of compd. LixFePO4 where 0 < x .ltoreq. 1 are Li3PO4 and Fe3(PO4)2 or Fe3(PO4)2.nH2O when n denotes a no. of hydrates.

L18 ANSWER 19 OF 29 CAPLUS COPYRIGHT 2003 ACS on STN
ACCESSION NUMBER: 2002:272913 CAPLUS
DOCUMENT NUMBER: 136:297399
TITLE: Nonaqueous electrolyte secondary battery with a compound of an olivinic structure as a cathode active material
INVENTOR(S): Okawa, Tsuyoshi; Hosoya, Mamoru; Kuyama, Junji; Fukushima, Yuzuru
PATENT ASSIGNEE(S): Sony Corporation, Japan
SOURCE: Eur. Pat. Appl., 15 pp.
CODEN: EPXXDW
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
EP 1195836	A2	20020410	EP 2001-123892	20011005
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO				
JP 2002117833	A2	20020419	JP 2000-308301	20001006
CN 1349266	A	20020515	CN 2001-142412	20010930
US 2002106564	A1	20020808	US 2001-972395	20011005

PRIORITY APPLN. INFO.: JP 2000-308301 A 20001006

IT Ball milling
Battery cathodes
Secondary batteries
(nonaq. electrolyte secondary battery with compd. of olivinic structure as cathode active material)

IT Carbon black, uses
RL: CPS (Chemical process); DEV (Device component use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(nonaq. electrolyte secondary battery with compd. of olivinic structure as cathode active material)

IT 10377-52-3, Lithium phosphate 13977-75-8, Phosphoric acid, iron(3+) salt (3:2)

RL: CPS (Chemical process); PEP (Physical, engineering or chemical process); PROC (Process)
(nonaq. electrolyte secondary battery with compd. of olivinic structure as cathode active material)

IT 108-32-7, Propylene carbonate 616-38-6, Dimethyl carbonate 7440-44-0, Carbon, uses **7782-42-5**, Graphite, uses 15365-14-7, **Iron lithium phosphate** felipo4 21324-40-3, Lithium hexafluorophosphate 407606-22-8, Chromium **iron lithium phosphate** (Cr0-0.8Fe0.2-1Li0.05-1.2(PO4)) 407606-24-0, Cobalt **iron lithium phosphate** (Co0-0.8Fe0.2-1Li0.05-1.2(PO4)) 407606-26-2, Copper **iron lithium phosphate** (Cu0-0.8Fe0.2-1Li0.05-1.2(PO4)) 407606-28-4, Aluminum **iron lithium phosphate** (Al0-0.8Fe0.2-1Li0.05-1.2(PO4)) 407606-30-8, Gallium **iron lithium phosphate** (Ga0-0.8Fe0.2-1Li0.05-1.2(PO4)) 407606-32-0, Boron **iron lithium phosphate** (B0-0.8Fe0.2-1Li0.05-1.2(PO4)) 407606-36-4, **Iron lithium** nickel **phosphate** (Fe0.2-1Li0.05-1.2Ni0-0.8(PO4)) 407606-39-7, **Iron lithium** vanadium **phosphate** (Fe0.2-1Li0.05-1.2V0-0.8(PO4)) 407606-42-2, **Iron lithium** molybdenum **phosphate** (Fe0.2-1Li0.05-1.2Mo0-0.8(PO4)) 407606-44-4, **Iron lithium** titanium **phosphate** (Fe0.2-1Li0.05-1.2Ti0-0.8(PO4)) 407606-47-7, **Iron lithium** zinc **phosphate** (Fe0.2-1Li0.05-1.2Zn0-0.8(PO4)) 407606-49-9, **Iron lithium** magnesium **phosphate** (Fe0.2-1Li0.05-1.2Mg0-0.8(PO4)) 407606-51-3, **Iron lithium** niobium **phosphate** (Fe0.2-1Li0.05-1.2Nb0-0.8(PO4)) 407629-83-8 407629-87-2 407629-90-7 407629-95-2 407630-01-7 407630-05-1 407630-10-8 407630-14-2 407630-19-7 407630-25-5, Aluminum **iron lithium phosphate** (Al0.7Fe0.3Li(PO4)) 407630-29-9, Gallium **iron lithium phosphate** (Ga0.7Fe0.3Li(PO4)) 407630-35-7 407630-40-4, Boron **iron lithium phosphate** (B0.75Fe0.25Li(PO4)) 407630-46-0
RL: DEV (Device component use); USES (Uses)
(nonaq. electrolyte secondary battery with compd. of olivinic structure as cathode active material)

IT 9011-17-0, Hexafluoropropylene-vinylidene fluoride copolymer
RL: DEV (Device component use); MOA (Modifier or additive use); USES (Uses)
(nonaq. electrolyte secondary battery with compd. of olivinic structure as cathode active material)

IT 7439-93-2, Lithium, uses
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PYP (Physical process); PROC (Process); USES (Uses)
(nonaq. electrolyte secondary battery with compd. of olivinic structure as cathode active material)

TI Nonaqueous electrolyte secondary battery with a compound of an olivinic structure as a cathode active material

AB A non-aq. electrolyte secondary cell contg. a compd. of an olivinic structure as a cathode active material is to be improved in load characteristics and cell capacity. To this end, there is provided a non-aq. electrolyte secondary cell including a cathode having a layer of a cathode active material contg. a compd. represented by the general formula LixFe1-yMyPO4, where M is at least one selected from the group consisting of Mn, Cr, Co, Cu, Ni, V, Mo, Ti, Zn, Al, Ga, Mg, B and Nb, with 0.05 .ltoreq. x .ltoreq. 1.2 and 0 .ltoreq. y .ltoreq. 0.8, an anode having a layer of an anode active material and a non-aq. electrolyte, wherein the layer of the cathode active material has a film thickness in a range from 25 to 110 .mu.m. If a layer of a cathode active material is provided on each surface of a cathode current collector, the sum of the film thicknesses of the layers of the cathode active material ranges between 50

and 220 .mu.m. The non-aq. electrolyte may be a liq.-based electrolyte or a polymer electrolyte.

L18 ANSWER 20 OF 29 CAPLUS COPYRIGHT 2003 ACS on STN
ACCESSION NUMBER: 2002:272908 CAPLUS
DOCUMENT NUMBER: 136:297394
TITLE: Solid electrolyte cell
INVENTOR(S): Goto, Shuji; Hosoya, Mamoru; Endo, Takahiro
PATENT ASSIGNEE(S): Sony Corporation, Japan
SOURCE: Eur. Pat. Appl., 16 pp.
CODEN: EPXXDW
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
EP 1195826	A2	20020410	EP 2001-123774	20011004
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO				
JP 2002117844	A2	20020419	JP 2000-306876	20001005
US 2002094481	A1	20020718	US 2001-966864	20010928
CN 1349273	A	20020515	CN 2001-139323	20010930

PRIORITY APPLN. INFO.: JP 2000-306876 A 20001005

IT Polyoxyalkylenes, uses
RL: DEV (Device component use); USES (Uses)
(lithium complex; solid electrolyte cell)

IT Battery cathodes
Secondary batteries
(solid electrolyte cell)

IT Fluoropolymers, uses
RL: DEV (Device component use); MOA (Modifier or additive use); USES (Uses)
(solid electrolyte cell)

IT 7439-93-2D, Lithium, polyethylene oxide complex 7791-03-9, Lithium perchlorate 12031-65-1, Lithium nickel oxide linio2 12057-17-9, Lithium manganese oxide limn2o4 15365-14-7, **Iron lithium phosphate** felipo4 25322-68-3D, Polyethylene oxide, lithium complex 116327-69-6, Cobalt lithium nickel oxide Co0.1LiNi0.9O2 147812-18-8, Iron lithium manganese oxide Fe0.05LiMn1.95O4 407606-22-8, Chromium **iron lithium phosphate** (Cr0-0.8Fe0.2-1Li0.05-1.2(PO4)) 407606-24-0, Cobalt **iron lithium phosphate** (Co0-0.8Fe0.2-1Li0.05-1.2(PO4)) 407606-26-2, Copper **iron lithium phosphate** (Cu0-0.8Fe0.2-1Li0.05-1.2(PO4)) 407606-28-4, Aluminum **iron lithium phosphate** (Al0-0.8Fe0.2-1Li0.05-1.2(PO4)) 407606-30-8, Gallium **iron lithium phosphate** (Ga0-0.8Fe0.2-1Li0.05-1.2(PO4)) 407606-32-0, Boron **iron lithium phosphate** (B0-0.8Fe0.2-1Li0.05-1.2(PO4)) 407606-34-2, **Iron lithium** manganese **phosphate** (Fe0.2-1Li0.05-1.2Mn0-0.8(PO4)) 407606-36-4, **Iron lithium** nickel **phosphate** (Fe0.2-1Li0.05-1.2Ni0-0.8(PO4)) 407606-39-7, **Iron lithium** vanadium **phosphate** (Fe0.2-1Li0.05-1.2V0-0.8(PO4)) 407606-42-2, **Iron lithium** molybdenum **phosphate** (Fe0.2-1Li0.05-1.2Mo0-0.8(PO4)) 407606-44-4, **Iron lithium** titanium **phosphate** (Fe0.2-1Li0.05-1.2Ti0-0.8(PO4)) 407606-47-7, **Iron lithium** zinc **phosphate** (Fe0.2-1Li0.05-1.2Zn0-0.8(PO4)) 407606-49-9, **Iron lithium** magnesium **phosphate** (Fe0.2-1Li0.05-1.2Mg0-0.8(PO4)) 407606-51-3, **Iron**

lithium niobium **phosphate** (Fe0.2-1Li0.05-1.2Nb0-0.8(PO4)) 408331-94-2, Cobalt lithium nickel oxide ((Co,Ni)Li0-2O2) 408331-95-3, Cobalt lithium manganese oxide ((Co,Mn)Li0-2O2) 408331-96-4, Cobalt lithium zinc oxide ((Co,Zn)Li0-2O2) 408331-97-5, Cobalt lithium tin oxide ((Co,Sn)Li0-2O2) 408331-99-7, Cobalt lithium vanadium oxide ((Co,V)Li0-2O2) 408332-00-3, Cobalt lithium titanium oxide ((Co,Ti)Li0-2O2) 408332-01-4, Cobalt lithium molybdenum oxide ((Co,Mo)Li0-2O2) 408332-02-5, Cobalt lithium tungsten oxide ((Co,W)Li0-2O2) 408332-03-6, Cobalt lithium magnesium oxide ((Co,Mg)Li0-2O2) 408332-04-7, Cobalt lithium strontium oxide ((Co,Sr)Li0-2O2) 408332-05-8, Cobalt lithium niobium oxide ((Co,Nb)Li0-2O2) 408332-06-9, Cobalt iron lithium oxide ((Co,Fe)Li0-2O2) 408332-07-0, Cobalt copper lithium oxide ((Co,Cu)Li0-2O2) 408332-08-1, Aluminum cobalt lithium oxide ((Al,Co)Li0-2O2) 408332-09-2, Cobalt lithium borate oxide (Co0-1Li0-2(BO2)0-1O0-2) 408332-10-5, Cobalt gallium lithium oxide ((Co,Ga)Li0-2O2) 408332-11-6, Chromium cobalt lithium oxide ((Cr,Co)Li0-2O2) 408332-12-7, Calcium cobalt lithium oxide ((Ca,Co)Li0-2O2) 408332-13-8, Iron lithium nickel oxide ((Fe,Ni)Li0-2O2) 408332-14-9, Copper lithium nickel oxide ((Cu,Ni)Li0-2O2) 408332-15-0, Aluminum lithium nickel oxide ((Al,Ni)Li0-2O2) 408332-16-1, Lithium nickel borate oxide (Li0-2Ni0-1(BO2)0-1O0-2) 408332-17-2, Gallium lithium nickel oxide ((Ga,Ni)Li0-2O2) 408332-18-3, Chromium lithium nickel oxide ((Cr,Ni)Li0-2O2) 408332-19-4, Calcium lithium nickel oxide ((Ca,Ni)Li0-2O2) 408332-20-7, Lithium manganese nickel oxide (Li0-2(Mn,Ni)O2) 408332-21-8, Lithium nickel zinc oxide (Li0-2(Ni,Zn)O2) 408332-22-9, Lithium nickel tin oxide (Li0-2(Ni,Sn)O2) 408332-23-0, Lithium nickel vanadium oxide (Li0-2(Ni,V)O2) 408332-24-1, Lithium nickel titanium oxide (Li0-2(Ni,Ti)O2) 408332-25-2, Lithium nickel tungsten oxide (Li0-2(Ni,W)O2) 408332-26-3, Lithium molybdenum nickel oxide (Li0-2(Mo,Ni)O2) 408332-27-4, Lithium magnesium nickel oxide (Li0-2(Mg,Ni)O2) 408332-28-5, Lithium nickel strontium oxide (Li0-2(Ni,Sr)O2) 408332-29-6, Lithium nickel niobium oxide (Li0-2(Ni,Nb)O2) 408332-30-9, Lithium manganese nickel oxide (Li0-2(Mn,Ni)2O4) 408332-31-0, Lithium manganese zinc oxide (Li0-2(Mn,Zn)2O4) 408332-32-1, Lithium manganese tin oxide (Li0-2(Mn,Sn)2O4) 408332-33-2, Lithium manganese vanadium oxide (Li0-2(Mn,V)2O4) 408332-34-3, Lithium manganese titanium oxide (Li0-2(Mn,Ti)2O4) 408332-35-4, Lithium manganese molybdenum oxide (Li0-2(Mn,Mo)2O4) 408332-36-5, Lithium manganese tungsten oxide (Li0-2(Mn,W)2O4) 408332-37-6, Lithium magnesium manganese oxide (Li0-2(Mg,Mn)2O4) 408332-38-7, Lithium manganese strontium oxide (Li0-2(Mn,Sr)2O4) 408332-39-8, Lithium manganese niobium oxide (Li0-2(Mn,Nb)2O4) 408332-40-1, Iron lithium manganese oxide ((Fe,Mn)2Li0-2O4) 408332-42-3, Cobalt lithium manganese oxide ((Co,Mn)2Li0-2O4) 408332-44-5, Aluminum lithium manganese oxide ((Al,Mn)2Li0-2O4) 408332-45-6, Lithium manganese borate oxide (Li0-2Mn0-2(BO2)0-2O0-4) 408332-46-7, Gallium lithium manganese oxide ((Ga,Mn)2Li0-2O4) 408332-47-8, Chromium lithium manganese oxide ((Cr,Mn)2Li0-2O4) 408332-48-9, Calcium lithium manganese oxide ((Ca,Mn)2Li0-2O4) 408332-58-1, Aluminum cobalt lithium nickel oxide (Al0.01Co0.98LiNi0.01O2) 412351-36-1, **Iron lithium** manganese **phosphate** (Fe0.9LiMn0.1(PO4))
RL: DEV (Device component use); USES (Uses)
(solid electrolyte cell)

IT 96-49-1, Ethylene carbonate 108-32-7, Propylene carbonate **7782-42-5**, Graphite, uses 12190-79-3, Cobalt lithium oxide colio2 21324-40-3, Lithium hexafluorophosphate 24937-79-9, Pvdf
RL: DEV (Device component use); MOA (Modifier or additive use); USES (Uses)
(solid electrolyte cell)

TI Solid electrolyte cell

AB A solid electrolyte cell in which cell characteristics are not

deteriorated even on overdischarge to the cell voltage of 0 V, such that the shape of the cell encapsulated in the laminate film is maintained. The cell includes a cathode contg. a compd. represented by the general formula LixFe1-yMyPO4 where 0.05 .ltoreq. x .ltoreq. 1.2, 0 .ltoreq. y .ltoreq. 0.8, and M is at least one selected from the group consisting of Mn, Cr, Co, Cu, Ni, V, Mo, Ti, Zn, Al, Ga, Mg, B and Nb, an anode and a solid electrolyte. An electrode unit 1 comprised of the cathode and the anode layered together with interposition of the solid electrolyte is encapsulated with a laminate film 2.

L18 ANSWER 21 OF 29 CAPLUS COPYRIGHT 2003 ACS on STN
ACCESSION NUMBER: 2002:256645 CAPLUS
DOCUMENT NUMBER: 136:297382
TITLE: Carbon-coated or carbon-crosslinked redox materials with transition metal-lithium oxide core for use as battery electrodes
INVENTOR(S): Armand, Michel; Gauthier, Michel; Magnan, Jean-Francois; Ravet, Nathalie
PATENT ASSIGNEE(S): Hydro-Quebec, Can.
SOURCE: PCT Int. Appl., 78 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: French
FAMILY ACC. NUM. COUNT: 2
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2002027824	A1	20020404	WO 2001-CA1350	20010921
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PH, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM				
RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG				
AU 2001093569	A5	20020408	AU 2001-93569	20010921
EP 1325526	A1	20030709	EP 2001-973907	20010921
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR				

PRIORITY APPLN. INFO.: CA 2000-2320661 A 20000926
WO 2001-CA1350 W 20010921

IT Silanes
RL: RCT (Reactant); RACT (Reactant or reagent)
(alkoxy, silicon source; carbon-coated or carbon-crosslinked redox materials with transition metal-lithium oxide core for use as battery electrodes)

IT Polyoxyalkylenes, uses
RL: NUU (Other use, unclassified); USES (Uses)
(alkyl ethers, oligomeric, aprotic solvent; carbon-coated or carbon-crosslinked redox materials with transition metal-lithium oxide core for use as battery electrodes)

IT Fluoropolymers, uses
Polyesters, uses
Polyethers, uses
RL: NUU (Other use, unclassified); USES (Uses)
(binders; carbon-coated or carbon-crosslinked redox materials with transition metal-lithium oxide core for use as battery electrodes)

IT Battery cathodes
Battery electrodes

Redox agents
(carbon-coated or carbon-crosslinked redox materials with transition metal-lithium oxide core for use as battery electrodes)

IT Transition metals, uses
RL: TEM (Technical or engineered material use); USES (Uses)
(electrodes contg.; carbon-coated or carbon-crosslinked redox materials with transition metal-lithium oxide core for use as battery electrodes)

IT 78-93-3, Methyl ethyl ketone, uses 96-48-0, Butyrolactone 96-49-1, Ethylene carbonate 107-21-1D, Ethylene glycol, alkyl ethers 108-32-7, Propylene carbonate 111-46-6D, Diethylene glycol, alkyl ethers 112-27-6D, Triethylene glycol, alkyl ethers 112-60-7D, Tetraethylene glycol, alkyl ethers 463-79-6D, Carbonic acid, C1-4-alkyl esters
RL: NUU (Other use, unclassified); USES (Uses)
(aprotic solvent; carbon-coated or carbon-crosslinked redox materials with transition metal-lithium oxide core for use as battery electrodes)

IT 9011-14-7, Poly(methyl methacrylate) 24937-79-9, Poly(vinylidene difluoride) 25014-41-9, Polyacrylonitrile
RL: NUU (Other use, unclassified); USES (Uses)
(binders; carbon-coated or carbon-crosslinked redox materials with transition metal-lithium oxide core for use as battery electrodes)

IT 50-99-7, Glucose, reactions 57-48-7, Fructose, reactions 57-50-1, Sucrose, reactions 58-86-6, Xylose, reactions 87-79-6, Sorbose **9002-88-4**, Polyethylene **9003-07-0**, Polypropylene 9004-34-6, Cellulose, reactions 9004-34-6D, Cellulose, esters 9004-35-7, Cellulose acetate 9005-25-8, Starch, reactions 25212-86-6, Poly(furfuryl alcohol) 43094-71-9, Ethylene-ethylene oxide copolymer
RL: RCT (Reactant); RACT (Reactant or reagent)
(carbon source; carbon-coated or carbon-crosslinked redox materials with transition metal-lithium oxide core for use as battery electrodes)

IT 407640-63-5, **Iron lithium** titanium **phosphate** sulfate (Fe0.85Li1.35Ti0.15(PO4)0.5(SO4))
RL: DEV (Device component use); USES (Uses)
(electrodes contg.; carbon-coated or carbon-crosslinked redox materials with transition metal-lithium oxide core for use as battery electrodes)

IT 7439-89-6D, Iron, mixed oxides 7439-96-5D, Manganese, mixed oxides 7440-02-0D, Nickel, mixed oxides 7440-32-6D, Titanium, mixed oxides 7440-47-3D, Chromium, mixed oxides 7440-48-4D, Cobalt, mixed oxides 7440-50-8D, Copper, mixed oxides 7440-62-2D, Vanadium, mixed oxides 13816-45-0, Triphylite 15365-14-7, **Iron lithium phosphate** (FeLiPO4) 213467-46-0, **Iron lithium** manganese **phosphate** (FeLi2Mn(PO4)2)
RL: TEM (Technical or engineered material use); USES (Uses)
(electrodes contg.; carbon-coated or carbon-crosslinked redox materials with transition metal-lithium oxide core for use as battery electrodes)

IT 90076-65-6
RL: NUU (Other use, unclassified); USES (Uses)
(electrolyte contg.; carbon-coated or carbon-crosslinked redox materials with transition metal-lithium oxide core for use as battery electrodes)

IT 516-03-0, Ferrous oxalate
RL: RCT (Reactant); RACT (Reactant or reagent)
(iron source; carbon-coated or carbon-crosslinked redox materials with transition metal-lithium oxide core for use as battery electrodes)

IT 7429-90-5, Aluminum, uses 7440-31-5, Tin, uses 7440-36-0, Antimony, uses 7440-66-6, Zinc, uses **7782-42-5**, Graphite, uses 39302-37-9, Lithium titanate 207803-50-7, Aluminum cobalt lithium magnesium nickel oxide 258511-24-9, Iron lithium nitride 263898-18-6, Cobalt manganese nitride 407640-62-4
RL: DEV (Device component use); USES (Uses)
(lithium-based cathodes contg.; carbon-coated or carbon-crosslinked redox materials with transition metal-lithium oxide core for use as battery electrodes)

IT 638-38-0, Manganese(II) acetate
RL: RCT (Reactant); RACT (Reactant or reagent)
(manganese source; carbon-coated or carbon-crosslinked redox materials with transition metal-lithium oxide core for use as battery electrodes)

IT 546-89-4, Lithium acetate 553-91-3, Lithium oxalate 554-13-2, Lithium carbonate 1309-37-1, Ferric oxide, reactions 1310-65-2, Lithium hydroxide 1313-13-9, Manganese dioxide, reactions 1314-62-1, Vanadium pentoxide, reactions 1317-61-9, Magnetite, reactions 10045-86-0, Ferric phosphate 10102-24-6, Lithium silicate (Li2SiO3) 10377-48-7, Lithium sulfate 10377-52-3, Lithium phosphate (Li3PO4) 10421-48-4, Ferric nitrate 12057-24-8, Lithium oxide, reactions 12627-14-4 13453-80-0, Lithium dihydrogen phosphate 63985-45-5, Lithium orthosilicate 407640-52-2, **Iron lithium** manganese **phosphate** (Fe0.1-1LiMn0-0.9(PO4)) 407640-53-3, **Iron lithium** magnesium **phosphate** (Fe0.7-1LiMg0-0.3(PO4)) 407640-54-4, Calcium **iron lithium phosphate** (Ca0-0.3Fe0.7-1Li(PO4)) 407640-55-5 407640-56-6, **Iron lithium phosphate** silicate (FeLi1-1.9(PO4)0.1-1(SiO4)0-0.9) 407640-57-7 407640-58-8, **Iron lithium** manganese **phosphate** sulfate (Fe0-1Li1-1.2Mn0-0.2[(PO4),(SO4)]) 407640-59-9, **Iron lithium** manganese **phosphate** ((Fe,Mn)Li1-1.6(PO4)) 407640-60-2, **Iron lithium** manganese **phosphate** sulfate (Fe1-2Li1-2Mn0-1[(PO4),(SO4)]) 407640-61-3, **Iron lithium** titanium **phosphate** ((Fe,Ti)Li0.5-2(PO4)1.5)
RL: RCT (Reactant); RACT (Reactant or reagent)
(metal source; carbon-coated or carbon-crosslinked redox materials with transition metal-lithium oxide core for use as battery electrodes)

IT 25322-68-3D, Polyethylene glycol, alkyl ethers
RL: NUU (Other use, unclassified); USES (Uses)
(oligomeric, aprotic solvent; carbon-coated or carbon-crosslinked redox materials with transition metal-lithium oxide core for use as battery electrodes)

IT 7664-38-2, Phosphoric acid, reactions 7664-38-2D, Phosphoric acid, esters 7783-28-0, Ammonium hydrogen phosphate 10124-54-6, Manganese phosphate
RL: RCT (Reactant); RACT (Reactant or reagent)
(phosphorus source; carbon-coated or carbon-crosslinked redox materials with transition metal-lithium oxide core for use as battery electrodes)

IT 7631-86-9, Silica, reactions
RL: RCT (Reactant); RACT (Reactant or reagent)
(silicon source; carbon-coated or carbon-crosslinked redox materials with transition metal-lithium oxide core for use as battery electrodes)

IT 7664-93-9, Sulfuric acid, reactions 7783-20-2, Ammonium sulfate, reactions
RL: RCT (Reactant); RACT (Reactant or reagent)
(sulfur source; carbon-coated or carbon-crosslinked redox materials with transition metal-lithium oxide core for use as battery electrodes)

TI Carbon-coated or carbon-crosslinked redox materials with transition metal-lithium oxide core for use as battery electrodes

AB Carbon-coated redox materials suitable for use in battery electrodes consist of a core surrounded by a coating, or interconnected by carbon crosslinks, in which the core includes a compn. of formula LixM1-yM'y(XO4)n, in which y = 0-0.6, x = 0-2, n = 0-1.5; M is a transition metal; and M' is a element of fixed valence selected from Mg2+, Ca2+, Al3+, and Zn2+, and X is S, P, and Si. Synthesis of the materials is carried out by reacting a balanced mixt. of appropriate precursors in a reducing atm., to adjust the valence of the transition metals, in the presence of a carbon source, which is then pyrolyzed. The resulting products exhibit an excellent elec. cond. and a highly enhanced chem. activity.

REFERENCE COUNT: 7 THERE ARE 7 CITED REFERENCES AVAILABLE FOR THIS

L18 ANSWER 22 OF 29 CAPLUS COPYRIGHT 2003 ACS on STN
ACCESSION NUMBER: 2002:253129 CAPLUS
DOCUMENT NUMBER: 136:281939
TITLE: Nonaqueous electrolyte battery cathode active material capable of reversibly doping/undoping lithium
INVENTOR(S): Hosoya, Mamoru; Takahashi, Kimio; Fukushima, Yuzuru
PATENT ASSIGNEE(S): Sony Corporation, Japan
SOURCE: Eur. Pat. Appl., 16 pp.
CODEN: EPXXDW
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
EP 1193787	A2	20020403	EP 2001-123181	20010927
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO				
JP 2002110161	A2	20020412	JP 2000-301399	20000929
US 2002114754	A1	20020822	US 2001-961895	20010924
TW 518781	B	20030121	TW 2001-90123611	20010925
CN 1350341	A	20020522	CN 2001-142556	20010929

PRIORITY APPLN. INFO.: JP 2000-301399 A 20000929

IT Secondary batteries
(lithium; nonaq. electrolyte battery cathode active material capable of reversibly doping/undoping lithium)

IT Ball milling
Battery cathodes
Composites
Sintering
(nonaq. electrolyte battery cathode active material capable of reversibly doping/undoping lithium)

IT Carbonaceous materials (technological products)
RL: DEV (Device component use); USES (Uses)
(nonaq. electrolyte battery cathode active material capable of reversibly doping/undoping lithium)

IT Fluoropolymers, uses
RL: DEV (Device component use); MOA (Modifier or additive use); USES (Uses)
(nonaq. electrolyte battery cathode active material capable of reversibly doping/undoping lithium)

IT 10028-23-6, Phosphoric acid, iron(2+) salt (2:3) octahydrate 10045-86-0, Ferric phosphate 10377-52-3, Lithium phosphate li3po4 31096-55-6
RL: CPS (Chemical process); PEP (Physical, engineering or chemical process); PROC (Process)
(nonaq. electrolyte battery cathode active material capable of reversibly doping/undoping lithium)

IT 96-49-1, Ethylene carbonate 108-32-7, Propylene carbonate 7439-93-2, Lithium, uses 7440-44-0, Carbon, uses **7782-42-5**, Graphite, uses 9011-17-0, Hexafluoropropylene-vinylidene fluoride copolymer 15365-14-7, **Iron lithium phosphate** FeLiPO4 21324-40-3, Lithium hexafluorophosphate
RL: DEV (Device component use); USES (Uses)
(nonaq. electrolyte battery cathode active material capable of reversibly doping/undoping lithium)

IT 24937-79-9, Pvdf
RL: DEV (Device component use); MOA (Modifier or additive use); USES (Uses)
(nonaq. electrolyte battery cathode active material capable of

reversibly doping/undoping lithium)

IT 198782-39-7P, **Iron lithium phosphate** (FeLi0-1(PO4))
RL: DEV (Device component use); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)
(nonaq. electrolyte battery cathode active material capable of reversibly doping/undoping lithium)

IT 872-36-6, Vinylene carbonate
RL: MOA (Modifier or additive use); USES (Uses)
(nonaq. electrolyte battery cathode active material capable of reversibly doping/undoping lithium)

TI Nonaqueous electrolyte battery cathode active material capable of reversibly doping/undoping lithium

AB An LiFePO4 carbon composite material is to be synthesized in a single phase to realize superior cell characteristics. To this end, in the prepn. of a cathode active material, starting materials for synthesis of a compd. having the formula LixFePO4, where 0 < x .ltoreq. 1, are mixed together, milled and sintered. A carbon material is added at one of these steps. As the starting materials for synthesis for LixFePO4, Li3PO4, Fe3PO4, Fe3(PO4)2 or its hydrate Fe3(PO4)2.cntdot.nH2O, where n is the no. of hydrates, are used, and the content of Fe3+ in the total iron in Fe3(PO4)2 or its hydrate Fe3(PO4)2.cntdot.nH2O is set to 61 wt% or less.

L18 ANSWER 23 OF 29 CAPLUS COPYRIGHT 2003 ACS on STN
ACCESSION NUMBER: 2002:253128 CAPLUS
DOCUMENT NUMBER: 136:281938
TITLE: Nonaqueous electrolyte battery cathode active material capable of reversibly doping/undoping lithium
INVENTOR(S): Hosoya, Mamoru; Takahashi, Kimio; Fukushima, Yuzuru
PATENT ASSIGNEE(S): Sony Corporation, Japan
SOURCE: Eur. Pat. Appl., 15 pp.
CODEN: EPXXDW
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
EP 1193786	A2	20020403	EP 2001-123180	20010927
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO				
JP 2002110163	A2	20020412	JP 2000-301401	20000929
US 2002061274	A1	20020523	US 2001-965273	20010927
TW 519776	B	20030201	TW 2001-90123924	20010927
CN 1349265	A	20020515	CN 2001-142532	20010929

PRIORITY APPLN. INFO.: JP 2000-301401 A 20000929

IT Secondary batteries
(lithium; nonaq. electrolyte battery cathode active material capable of reversibly doping/undoping lithium)

IT Battery cathodes
Composites
Sintering
(nonaq. electrolyte battery cathode active material capable of reversibly doping/undoping lithium)

IT Carbon black, uses
Carbonaceous materials (technological products)
RL: DEV (Device component use); MOA (Modifier or additive use); USES (Uses)
(nonaq. electrolyte battery cathode active material capable of reversibly doping/undoping lithium)

IT Fluoropolymers, uses

RL: MOA (Modifier or additive use); USES (Uses)
(nonaq. electrolyte battery cathode active material capable of reversibly doping/undoping lithium)

IT Ball milling
(planetary; nonaq. electrolyte battery cathode active material capable of reversibly doping/undoping lithium)

IT 10028-23-6, Phosphoric acid, iron(2+) salt (2:3) octahydrate 10377-52-3, Lithium phosphate 14940-41-1, Iron phosphate fe3(po4)2 31096-55-6
RL: CPS (Chemical process); PEP (Physical, engineering or chemical process); PROC (Process)
(nonaq. electrolyte battery cathode active material capable of reversibly doping/undoping lithium)

IT 96-49-1, Ethylene carbonate 108-32-7, Propylene carbonate 616-38-6, Dimethyl carbonate 7439-93-2, Lithium, uses **7782-42-5**, Graphite, uses 21324-40-3, Lithium hexafluorophosphate
RL: DEV (Device component use); USES (Uses)
(nonaq. electrolyte battery cathode active material capable of reversibly doping/undoping lithium)

IT 872-36-6, Vinylene carbonate 7440-44-0, Carbon, uses 9011-17-0, Hexafluoropropylene-vinylidene fluoride copolymer 24937-79-9, Poly(vinylidene fluoride)
RL: DEV (Device component use); MOA (Modifier or additive use); USES (Uses)
(nonaq. electrolyte battery cathode active material capable of reversibly doping/undoping lithium)

IT 15365-14-7P, **Iron lithium phosphate** felipo4
198782-39-7P, **Iron lithium phosphate** (FeLi0-1(PO4))
RL: DEV (Device component use); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)
(nonaq. electrolyte battery cathode active material capable of reversibly doping/undoping lithium)

IT 7782-44-7, Oxygen, uses
RL: TEM (Technical or engineered material use); USES (Uses)
(nonaq. electrolyte battery cathode active material capable of reversibly doping/undoping lithium)

TI Nonaqueous electrolyte battery cathode active material capable of reversibly doping/undoping lithium

AB A LiFePO4 carbon composite material is to be synthesized in a single phase satisfactorily to achieve superior cell characteristics. In prepg. a cathode active material, starting materials for synthesis of a compd. represented by the general formula LixFePO4, where 0 < x .ltoreq. 1, are mixed, milled and a carbon material is added to the resulting mass at an optional time point in the course of mixing, milling and sintering. Li3PO4, Fe3(PO4)2 or its hydrates Fe3(PO4)2.cntdot.nH2O, where n denotes the no. of hydrates, are used as the starting materials for synthesis of LixFePO4. The temp. of a product from the sintering is set to 305.degree. or less when the product from the sintering is exposed to atm. The oxygen concn. in a sintering atm. is set to 1012 ppm in vol. or less at the time point of sintering.

L18 ANSWER 24 OF 29 CAPLUS COPYRIGHT 2003 ACS on STN
ACCESSION NUMBER: 2002:253127 CAPLUS
DOCUMENT NUMBER: 136:281937
TITLE: Nonaqueous electrolyte battery with cathode active material capable of reversibly doping/undoping lithium
INVENTOR(S): Hosoya, Mamoru; Takahashi, Kimio; Fukushima, Yuzuru
PATENT ASSIGNEE(S): Sony Corporation, Japan
SOURCE: Eur. Pat. Appl., 16 pp.
CODEN: EPXXDW
DOCUMENT TYPE: Patent
LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
EP 1193785	A2	20020403	EP 2001-122769	20010921
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO				
JP 2002110164	A2	20020412	JP 2000-301402	20000929
US 2002059719	A1	20020523	US 2001-956514	20010919
TW 513823	B	20021211	TW 2001-90123221	20010920
CN 1346159	A	20020424	CN 2001-138523	20010928

PRIORITY APPLN. INFO.: JP 2000-301402 A 20000929

IT Secondary batteries
(lithium; nonaq. electrolyte battery with cathode active material capable of reversibly doping/undoping lithium)

IT Battery cathodes
Composites
(nonaq. electrolyte battery with cathode active material capable of reversibly doping/undoping lithium)

IT Carbonaceous materials (technological products)
RL: DEV (Device component use); USES (Uses)
(nonaq. electrolyte battery with cathode active material capable of reversibly doping/undoping lithium)

IT Fluoropolymers, uses
RL: DEV (Device component use); MOA (Modifier or additive use); USES (Uses)
(nonaq. electrolyte battery with cathode active material capable of reversibly doping/undoping lithium)

IT Ball milling
(planetary; nonaq. electrolyte battery with cathode active material capable of reversibly doping/undoping lithium)

IT 10377-52-3, Lithium phosphate li3po4 14940-41-1, Iron phosphate fe3(po4)2 31096-55-6
RL: CPS (Chemical process); PEP (Physical, engineering or chemical process); PROC (Process)
(nonaq. electrolyte battery with cathode active material capable of reversibly doping/undoping lithium)

IT 96-49-1, Ethylene carbonate 108-32-7, Propylene carbonate 616-38-6, Dimethyl carbonate 872-36-6, Vinylene carbonate 7439-93-2, Lithium, uses **7782-42-5**, Graphite, uses 9011-17-0, Hexafluoropropylene-vinylidene fluoride copolymer 21324-40-3, Lithium hexafluorophosphate
RL: DEV (Device component use); USES (Uses)
(nonaq. electrolyte battery with cathode active material capable of reversibly doping/undoping lithium)

IT 7440-44-0, Carbon, uses 24937-79-9, Pvdf
RL: DEV (Device component use); MOA (Modifier or additive use); USES (Uses)
(nonaq. electrolyte battery with cathode active material capable of reversibly doping/undoping lithium)

IT 15365-14-7P, **Iron lithium phosphate** FeLiPO4
198782-39-7P, **Iron lithium phosphate** (FeLiO-1(PO4))
RL: DEV (Device component use); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)
(nonaq. electrolyte battery with cathode active material capable of reversibly doping/undoping lithium)

TI Nonaqueous electrolyte battery with cathode active material capable of reversibly doping/undoping lithium

AB A LiFePO4 carbon composite material is to be synthesized in a single phase satisfactorily to prevent the deterioration of the performance of the cathode active material from occurring and achieve superior cell

characteristics. In prepg. a cathode active material, starting materials for synthesis of a compd. represented by the general formula LixFePO4, where 0 < x .ltoreq. 1, are mixed, milled and a carbon material is added to the resulting mass at an optional time point in the course of mixing, milling and sintering. Li3PO4, Fe3(PO4)2 or its hydrates Fe3(PO4)2.cntdot.nH2O, where n denotes the no. of hydrates, are used as the starting materials for synthesis of LixFePO4. The temp. of a product from the sintering is set to 305.degree. or less when the product from the sintering is exposed to atm.

L18 ANSWER 25 OF 29 CAPLUS COPYRIGHT 2003 ACS on STN
ACCESSION NUMBER: 2001:796403 CAPLUS
DOCUMENT NUMBER: 135:346864
TITLE: Cathode for nonaqueous electrolyte lithium ion battery
INVENTOR(S): Yamada, Atsuo; Yamahira, Takayuki
PATENT ASSIGNEE(S): Sony Corporation, Japan
SOURCE: Eur. Pat. Appl., 26 pp.
CODEN: EPXXDW
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
EP 1150368	A2	20011031	EP 2001-109919	20010424
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO				
JP 2001307730	A2	20011102	JP 2000-128998	20000425
CA 2344981	AA	20011025	CA 2001-2344981	20010425
CN 1320976	A	20011107	CN 2001-117211	20010425
US 2002004169	A1	20020110	US 2001-842485	20010425

PRIORITY APPLN. INFO.: JP 2000-128998 A 20000425

IT Charcoal
RL: DEV (Device component use); USES (Uses)
(activated; cathode for nonaq. electrolyte lithium ion battery)
IT Battery cathodes
(cathode for nonaq. electrolyte lithium ion battery)
IT Carbon fibers, uses
Carbonaceous materials (technological products)
Coke
Petroleum coke
RL: DEV (Device component use); USES (Uses)
(cathode for nonaq. electrolyte lithium ion battery)
IT Carbon black, uses
RL: MOA (Modifier or additive use); USES (Uses)
(cathode for nonaq. electrolyte lithium ion battery)
IT Fluoropolymers, uses
RL: TEM (Technical or engineered material use); USES (Uses)
(cathode for nonaq. electrolyte lithium ion battery)
IT Organic compounds, uses
RL: DEV (Device component use); USES (Uses)
(high mol., sintered; cathode for nonaq. electrolyte lithium ion battery)
IT Secondary batteries
(lithium; cathode for nonaq. electrolyte lithium ion battery)
IT Coke
RL: DEV (Device component use); USES (Uses)
(needle; cathode for nonaq. electrolyte lithium ion battery)
IT Coke
RL: DEV (Device component use); USES (Uses)
(pitch; cathode for nonaq. electrolyte lithium ion battery)

IT Furan resins
Phenolic resins, uses
RL: DEV (Device component use); USES (Uses)
(sintered and carbonized; cathode for nonaq. electrolyte lithium ion battery)

IT 50-21-5D, Lactic acid, ester 60-29-7, Diethyl ether, uses 64-19-7D, Acetic acid, ester, uses 75-05-8, Acetonitrile, uses 79-09-4D, Propionic acid, ester 96-47-9, 2-Methyltetrahydrofuran 96-48-0 96-49-1, Ethylene carbonate 100-66-3, Anisole, uses 105-58-8, Diethyl carbonate 107-12-0, Propionitrile 108-32-7, Propylene carbonate 109-99-9, Thf, uses 110-71-4, 1,2-Dimethoxyethane 126-33-0, Sulfolane 409-21-2, Silicon carbide sic, uses 554-12-1, Methyl propionate 616-38-6, Dimethyl carbonate 623-42-7, Methyl butyrate 623-96-1, Dipropyl carbonate 629-14-1, 1,2-Diethoxyethane 646-06-0, 1,3-Dioxolane 872-36-6, Vinylene carbonate 1072-47-5, 4-Methyl-1,3-dioxolane 1313-08-2 2550-62-1, Lithium methanesulfonate 4437-85-8, Butylene carbonate 7439-93-2, Lithium, uses 7440-50-8, Copper, uses 7447-41-8, Lithium chloride, uses 7550-35-8, Lithium bromide **7782-42-5**, Graphite, uses 7791-03-9, Lithium perchlorate **9003-07-0**, Polypropylene 12007-81-7, Silicon tetraboride 12008-29-6, Silicon hexaboride 12013-56-8, Calcium disilicide 12017-12-8, Cobalt disilicide 12018-09-6, Chromium disilicide 12022-99-0, Iron disilicide 12032-86-9, Manganese disilicide 12033-76-0, Silicon nitride oxide Si2N2O 12033-89-5, Silicon nitride, uses 12034-80-9, Niobium disilicide 12039-79-1, Tantalum disilicide 12039-83-7, Titanium silicide TiSi2 12039-87-1, Vanadium disilicide 12039-88-2, Tungsten disilicide 12059-14-2, Nickel silicide (Ni2Si) 12136-78-6, Molybdenum disilicide 12159-07-8, Copper silicide cu5si 12190-79-3, Cobalt lithium oxide colio2 12201-89-7, Nickel disilicide 14283-07-9, Lithium tetrafluoroborate 14485-20-2, Lithium tetraphenylborate 15365-14-7, **Iron lithium phosphate** FeLiPO4 19414-36-9, **Iron lithium manganese phosphate** ((Fe,Mn)Li(PO4)) 21324-40-3, Lithium hexafluorophosphate 22831-39-6, Magnesium silicide (Mg2Si) 29935-35-1, Lithium hexafluoroarsenate 33454-82-9, Lithium trifluoromethanesulfonate 35678-71-8, Methylsulfolane 90076-65-6 113066-89-0, Cobalt lithium nickel oxide Co0.2LiNi0.8O2 113671-38-8, Silicon oxide SiO0-2 160479-36-7, Lithium tin oxide 178958-56-0, Lithium silicon oxide 300858-61-1 339333-78-7, Zinc silicide ZnSi2 371148-86-6, Tin oxide (SnO0-2) 371148-87-7, Lithium magnesium manganese oxide (LiMg0.2Mn0.8O2)
RL: DEV (Device component use); USES (Uses)
(cathode for nonaq. electrolyte lithium ion battery)

IT 24937-79-9, Pvdf
RL: TEM (Technical or engineered material use); USES (Uses)
(cathode for nonaq. electrolyte lithium ion battery)

IT 7440-44-0, Carbon, uses
RL: DEV (Device component use); USES (Uses)
(pyrocarbon; cathode for nonaq. electrolyte lithium ion battery)

TI Cathode for nonaqueous electrolyte lithium ion battery

AB The lithium ion cell is improved appreciably in operational stability under special conditions, such as high temps., and exhibits superior characteristics against over-discharging, while guaranteeing compatibility to the operating voltage of a conventional lithium ion cell and an energy d. equiv. to that of the conventional lithium ion cell. To this end, the lithium ion cell includes a pos. electrode, a neg. electrode and a nonaq. electrolyte, and uses, as a pos. electrode active material, a composite material of a first lithium compd. represented by the general formula LixMyPO4, where 0 <x< 2, 0.8 <y< 1.2 and M contains Fe, and a second lithium compd. having a potential holder than the potential of the first lithium compd.

L18 ANSWER 26 OF 29 CAPLUS

ACCESSION NUMBER: 2000:790241 CAPLUS
DOCUMENT NUMBER: 133:323991
TITLE: Phosphate additives for nonaqueous electrolyte in rechargeable lithium ion batteries
INVENTOR(S): Gan, Hong; Takeuchi, Esther S.
PATENT ASSIGNEE(S): Wilson Greatbatch Ltd., USA
SOURCE: Eur. Pat. Appl., 14 pp.
CODEN: EPXXDW
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 3
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
EP 1050916	A1	20001108	EP 2000-303719	20000503
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO				
US 6203942	B1	20010320	US 1999-303877	19990503
JP 2000331710	A2	20001130	JP 2000-132538	20000501

PRIORITY APPLN. INFO.: US 1999-303877 A 19990503
US 1998-105279P P 19981022
OTHER SOURCE(S): MARPAT 133:323991
IT Secondary batteries
(lithium; phosphate additives for nonaq. electrolyte in rechargeable lithium ion batteries)
IT Battery electrolytes
(phosphate additives for nonaq. electrolyte in rechargeable lithium ion batteries)
IT Alkali metals, uses
Carbon black, uses
Carbon fibers, uses
Coke
RL: DEV (Device component use); USES (Uses)
(phosphate additives for nonaq. electrolyte in rechargeable lithium ion batteries)
IT Fluoropolymers, uses
RL: TEM (Technical or engineered material use); USES (Uses)
(phosphate additives for nonaq. electrolyte in rechargeable lithium ion batteries)
IT 7440-44-0, Carbon, uses
RL: DEV (Device component use); USES (Uses)
(glassy; phosphate additives for nonaq. electrolyte in rechargeable lithium ion batteries)
IT 96-49-1, Ethylene carbonate 105-58-8, Diethyl carbonate 108-32-7, Propylene carbonate 556-65-0, Lithium thiocyanate 616-38-6, Dimethyl carbonate 623-53-0, Ethyl methyl carbonate 623-96-1, Dipropyl carbonate 872-36-6, Vinylene carbonate 2923-17-3 2923-20-8 4437-85-8, Butylene carbonate 7439-93-2, Lithium, uses **7782-42-5**, Graphite, uses 7790-69-4, Lithium nitrate 7791-03-9, Lithium perchlorate 11113-67-0, **Iron Lithium** oxide 11126-15-1, Lithium vanadium oxide 12031-63-9, Lithium niobium oxide (LiNbO3) 12190-79-3, Cobalt lithium oxide colio2 12680-08-9, Lithium titanium sulfide 13453-75-3, Lithium fluorosulfate 14024-11-4, Lithium tetrachloroaluminate 14283-07-9, Lithium tetrafluoroborate 14485-20-2, Lithium tetraphenylborate 15955-98-3, Lithium tetrachlorogallate 18424-17-4, Lithium hexafluoroantimonate 21324-40-3, Lithium hexafluorophosphate 29935-35-1, Lithium hexafluoroarsenate 33454-82-9, Lithium triflate 35363-40-7, Ethyl propyl carbonate 37296-91-6, Lithium molybdenum oxide 37367-96-7, Lithium molybdenum sulfide 39300-70-4, Lithium nickel oxide 39302-37-9, Lithium titanium oxide 39457-42-6, Lithium manganese oxide 51177-06-1, Chromium Lithium oxide

52627-24-4, Cobalt Lithium oxide 56321-19-8, Lithium niobium sulfide 56525-42-9, Methyl propyl carbonate 61673-65-2, Lithium niobium selenide 61673-69-6, Lithium titanium selenide 61673-70-9, Lithium titanium telluride 61673-71-0, Lithium vanadium selenide 74245-06-0, Lithium vanadium sulfide 80341-49-7, **Iron Lithium** sulfide 90076-65-6 96352-80-6, Lithium molybdenum selenide 96352-81-7, Lithium molybdenum telluride 103288-79-5, Cobalt Lithium sulfide 104708-77-2, Copper Lithium oxide 115028-88-1 132404-42-3 148884-75-7, Cobalt Lithium selenide 264142-74-7, Lithium vanadium telluride 264142-75-8, Chromium Lithium sulfide 264142-76-9, Chromium Lithium selenide 264142-77-0, Chromium Lithium telluride 264142-78-1, Copper Lithium sulfide 264142-79-2, Copper Lithium selenide 264142-81-6, Lithium niobium telluride 264142-82-7, **Iron Lithium** selenide 264142-83-8, **Iron Lithium** telluride 264142-84-9, Lithium nickel sulfide 264142-85-0, Lithium nickel selenide 264142-86-1, Lithium nickel telluride 264142-87-2, Cobalt Lithium telluride 264142-88-3, Lithium manganese sulfide 264142-89-4, Lithium manganese selenide 264142-90-7, Lithium manganese telluride
RL: DEV (Device component use); USES (Uses)
(**phosphate** additives for nonaq. electrolyte in rechargeable lithium ion batteries)

IT 107-66-4, Dibutylphosphate 598-02-7, Diethyl phosphate 701-64-4, Monophenyl phosphate 812-00-0, Monomethyl phosphate 813-78-5, Dimethyl phosphate 838-85-7, Diphenyl phosphate 884-90-2, Phosphoric acid, benzyl Diethyl ester 1623-06-9, Monopropyl phosphate 1623-07-0, Benzyl phosphate 1623-14-9, Monoethyl phosphate 1623-15-0, Monobutyl phosphate 1707-92-2, Tribenzyl phosphate 1804-93-9, Dipropyl phosphate 3066-75-9 7748-09-6, Diallyl phosphate 10497-05-9, Tris(trimethylsilyl)phosphate 28519-15-5, Phosphoric acid, benzyl dibutyl ester 32636-65-0, Diethyl Diphenylmethyl phosphate 67293-73-6, Phosphoric acid, dimethyl phenylmethyl ester 269402-58-6, Phosphoric acid, phenylmethyl Dipropyl ester
RL: MOA (Modifier or additive use); USES (Uses)
(phosphate additives for nonaq. electrolyte in rechargeable lithium ion batteries)

TI Phosphate additives for nonaqueous electrolyte in rechargeable lithium ion batteries

AB In a lithium ion electrochem. cell having high charge/discharge capacity, long cycle life and exhibiting a reduced first cycle irreversible capacity, at least one phosphate additive is added to an electrolyte comprising an alkali metal salt dissolved in a solvent mixt. that includes ethylene carbonate, di-Me carbonate, ethylmethyl carbonate and di-Et carbonate. The phosphate additive has the formula: (R1O)P(:O)(OR2)(OR3) and wherein if R1, R2, and R3 are the same or different and may represent a H atom or a satd. or unsatd. org. group contg. 1-13 C atoms and wherein R1, R2, and R3 are not H, at least one of them is CR4R5R6 wherein R4 is an arom. substituent or an unsatd. org. or inorg. group and R5 and R6 are the same or different and may represent a H atom or a satd. or unsatd. org. or inorg. group; with the proviso that the phosphate additive is not dibenzyl phosphate. The preferred additive is an alkyl phosphate compd.

REFERENCE COUNT: 18 THERE ARE 18 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L18 ANSWER 27 OF 29 CAPLUS
ACCESSION NUMBER: 2000:774123 CAPLUS
DOCUMENT NUMBER: 133:352634
TITLE: Electrode materials having increased surface conductivity
INVENTOR(S): Ravet, Nathalie; Besner, Simon; Simoneau, Martin; Vallee, Alain; Armand, Michel; Magnan, Jean-francois
PATENT ASSIGNEE(S): Hydro-Quebec, Can.
SOURCE: Eur. Pat. Appl., 22 pp.

CODEN: EPXXDW
DOCUMENT TYPE: Patent
LANGUAGE: French
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
EP 1049182	A2	20001102	EP 2000-401207	20000502
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO				
CA 2307119	AA	20001030	CA 2000-2307119	20000428
JP 2001015111	A2	20010119	JP 2000-132779	20000501
US 2002195591	A1	20021226	US 2002-175794	20020621

PRIORITY APPLN. INFO.: CA 1999-2270771 A 19990430
US 2000-560572 B1 20000428

IT Metallic fibers
RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)
(aluminum; electrode materials having increased surface cond.)
IT Windows
Windows
(electrochromic; electrode materials having increased surface cond.)
IT Battery cathodes
Capacitor electrodes
Electrochromic materials
Electrodes
Primary batteries
Secondary batteries
Thermal decomposition
(electrode materials having increased surface cond.)
IT Oxides (inorganic), uses
Oxynitrides
Phosphates, uses
Silicates, uses
Sulfates, uses
RL: DEV (Device component use); SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(electrode materials having increased surface cond.)
IT Carbon black, uses
EPDM rubber
RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)
(electrode materials having increased surface cond.)
IT Hydrocarbons, reactions
RL: PEP (Physical, engineering or chemical process); RCT (Reactant); PROC (Process); RACT (Reactant or reagent)
(electrode materials having increased surface cond.)
IT Organic compounds, reactions
RL: PEP (Physical, engineering or chemical process); RCT (Reactant); PROC (Process); RACT (Reactant or reagent)
(electrode materials having increased surface cond.)
IT Polymers, reactions
RL: PEP (Physical, engineering or chemical process); RCT (Reactant); PROC (Process); RACT (Reactant or reagent)
(electrode materials having increased surface cond.)
IT Polyolefins
RL: PEP (Physical, engineering or chemical process); RCT (Reactant); PROC (Process); RACT (Reactant or reagent)
(electrode materials having increased surface cond.)
IT Polysaccharides, reactions
RL: PEP (Physical, engineering or chemical process); RCT (Reactant); PROC

(Process); RACT (Reactant or reagent)
(electrode materials having increased surface cond.)

IT Polyoxyalkylenes, uses
RL: NUU (Other use, unclassified); TEM (Technical or engineered material use); USES (Uses)
(electrolytes; electrode materials having increased surface cond.)

IT Primary batteries
Secondary batteries
(lithium; electrode materials having increased surface cond.)

IT Fluorides, uses
RL: DEV (Device component use); SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(oxyfluorides; electrode materials having increased surface cond.)

IT Electrolytic capacitors
(supercapacitors; electrode materials having increased surface cond.)

IT Electrochromic devices
Electrochromic devices
(windows; electrode materials having increased surface cond.)

IT 7440-44-0P, Carbon, uses 15365-14-7P, **Iron lithium phosphate** (FeLiPO4) 30734-08-8P, Lithium manganese silicate Li2MnSiO4 39302-37-9P, Lithium titanium oxide 180984-63-8P, Lithium magnesium titanium oxide 252943-50-3P, Lithium vanadium phosphate silicate Li3.5V2(PO4)2.5(SiO4)0.5 304905-30-4P 304905-31-5P, Iron lithium fluoride (FeLi0.2F3) 304905-32-6P, Lithium manganese nitride oxide (Li3MnNO) 304905-33-7P 304905-34-8P 304905-35-9P, Lithium magnesium titanium oxide (Li3.5Mg0.5Ti4O12) 304905-36-0P, Iron lithium phosphorus silicon oxide 304905-37-1P 304905-38-2P, Iron lithium phosphorus fluoride oxide 304905-39-3P 304905-40-6P 304905-41-7P 304905-42-8P
RL: DEV (Device component use); SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(electrode materials having increased surface cond.)

IT 1314-35-8, Tungsten oxide WO3, uses **7782-42-5**, Graphite, uses 50926-11-9, Indium tin oxide 65324-39-2, Celgard 2400
RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)
(electrode materials having increased surface cond.)

IT 1333-74-0, Hydrogen, uses 7440-37-1, Argon, uses 7440-59-7, Helium, uses 7727-37-9, Nitrogen, uses 7782-44-7, Oxygen, uses
RL: NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(electrode materials having increased surface cond.)

IT 78-10-4 109-72-8, Butyl lithium, uses 546-68-9 553-91-3, Lithium oxalate 554-13-2, Lithium carbonate 1310-65-2, Lithium hydroxide 1344-43-0, Manganese oxide MnO, uses 5931-89-5, Cobalt acetate 5965-38-8, Cobalt oxalate dihydrate 6108-17-4, Lithium acetate dihydrate 6156-78-1, Manganese acetate tetrahydrate 6556-16-7, Manganese oxalate dihydrate 7722-76-1, Ammonium dihydrogen phosphate 7783-50-8, Iron fluoride FeF3 7803-55-6, Ammonium vanadate 9003-01-4, Polyacrylic acid 9011-17-0, Hexafluoropropylene-vinylidene fluoride copolymer 10028-22-5, Ferric sulfate 10102-24-6, Lithium silicate Li2SiO3 10377-52-3, Lithium phosphate Li3PO4 13463-10-0, Ferric phosphate dihydrate 14567-67-0, Vivianite 16674-78-5, Magnesium acetate tetrahydrate 25656-42-2, Lithium polyacrylate 26134-62-3, Lithium nitride 145673-07-0
RL: NUU (Other use, unclassified); RCT (Reactant); RACT (Reactant or reagent); USES (Uses)
(electrode materials having increased surface cond.)

IT 304905-43-9 305324-61-2
RL: NUU (Other use, unclassified); TEM (Technical or engineered material use); USES (Uses)
(electrode materials having increased surface cond.)

IT 57-50-1, reactions 77-47-4, Hexachlorocyclopentadiene 98-00-0D, Furfuryl alcohol, derivs., polymers 100-42-5D, Styrene, derivs., polymers 107-13-1D, Acrylonitrile, derivs., polymers 108-05-4D, Vinyl acetate, derivs., polymers 108-95-2D, Phenol, derivs., polymers, reactions 115-07-1, 1-Propene, reactions 120-12-7, Anthracene, reactions 128-69-8D, 3,4,9,10-Perylenetetracarboxylic acid dianhydride, polymers with Jeffamine 600 198-55-0D, Perylene, derivs., polymers 630-08-0, Carbon monoxide, reactions 996-70-3, Tetrakis(dimethylamino)ethylene 1321-74-0D, Divinylbenzene, derivs., polymers 6674-22-2, DBU **9002-88-4** 9002-89-5 **9003-07-0**, Polypropylene 9003-17-2D, Polybutadiene, derivs. 9004-34-6D, Cellulose, derivs., reactions 9004-35-7, Cellulose acetate 9005-25-8D, Starch, derivs., reactions 15133-82-1, Tetrakis(triphenylphosphine)nickel 25014-41-9, Polyacrylonitrile 51736-72-2, Polyvinylidene bromide 157889-12-8, Jeffamine ED 600-perylenetetracarboxylic acid dianhydride copolymer
RL: PEP (Physical, engineering or chemical process); RCT (Reactant); PROC (Process); RACT (Reactant or reagent)
(electrode materials having increased surface cond.)

IT 75-05-8, Acetonitrile, uses 96-48-0, .gamma.-Butyrolactone 96-49-1, Ethylene carbonate 110-71-4 616-38-6, Dimethyl carbonate 646-06-0, Dioxolane 2832-49-7, Tetraethylsulfamide 21324-40-3, Lithium hexafluorophosphate LiPF6 25322-68-3 66950-70-7 90076-65-6, Lithium bis(trifluoromethanesulfonyl)imide
RL: NUU (Other use, unclassified); TEM (Technical or engineered material use); USES (Uses)
(electrolytes; electrode materials having increased surface cond.)

IT 7429-90-5, Aluminum, uses
RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)
(foils, grills; electrode materials having increased surface cond.)

IT 7439-93-2, Lithium, uses
RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)
(foils; electrode materials having increased surface cond.)

IT 7440-50-8, Copper, uses
RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)
(grills; electrode materials having increased surface cond.)

IT 7440-02-0, Nickel, uses
RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)
(substrates; electrode materials having increased surface cond.)

TI Electrode materials having increased surface conductivity

AB Intercalated electrode materials comprising complex oxides, esp. Li oxides, are prepd., suitable for redox reaction by exchange of alkali metal ions (esp. Li) and electrons with an electrolyte. The complex oxide electrodes can be used in batteries, supercapacitors or electrochromic light moderators. The complex oxides have the general formula AaMmZzOoNnFf, where A is alkali metal (e.g., Li), M is .gtoreq.1 transition metal (e.g., Fe, Mn, V, Ti, Mo, Nb, Zn, W), Z is .gtoreq.1 nonmetal (e.g., P, S, Si, Se, As, Ge, B, Sn), and a,m,z,o,n,f are chosen for elec. neutrality. A conductive carbon coating is formed or deposited on the surface of the electrode material, e.g., by pyrolysis of an org. material, hydrocarbons or polymers, for increased surface cond.

L18 ANSWER 28 OF 29 CAPLUS
ACCESSION NUMBER: 1998:509379 CAPLUS
DOCUMENT NUMBER: 129:191547
TITLE: Nonaqueous-electrolyte lithium secondary battery having high discharge capacity
INVENTOR(S): Nagata, Mikito; Karril, Amin; Tsukamoto, Kotobuki

PATENT ASSIGNEE(S): Japan Storage Battery Co., Ltd., Japan
SOURCE: Jpn. Kokai Tokkyo Koho, 5 pp.
CODEN: JKXXAF
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 10208730	A2	19980807	JP 1997-25985	19970124

PRIORITY APPLN. INFO.: JP 1997-25985 19970124

IT Battery cathodes
(Li secondary batteries with cathodes contg. Li metal oxide and Li+ supplier additives)

IT Coke
RL: DEV (Device component use); USES (Uses)
(anode; Li secondary batteries with cathodes contg. Li metal oxide and Li+ supplier additives)

IT Battery anodes
(oxide; Li secondary batteries with cathodes contg. Li metal oxide and Li+ supplier additives)

IT 7440-44-0, Carbon, uses 7631-86-9, Silica, uses **7782-42-5,** Graphite, uses 18282-10-5, Tin oxide (SnO2) 21651-19-4, Tin oxide (SnO) 39432-42-3, Tin hydroxide oxide Sn3(OH)2O2 186448-61-3, Lithium oxide silicide (Li2Si) 211753-60-5, Lithium tin oxide (LiSnO2)
RL: DEV (Device component use); USES (Uses)
(anode; Li secondary batteries with cathodes contg. Li metal oxide and Li+ supplier additives)

IT 12057-17-9, Lithium manganese oxide (LiMn2O4) 12162-79-7, Lithium manganese oxide (LiMnO2) 12325-84-7, Lithium nickel oxide (Li2NiO2) 36058-25-0, **Lithium iron phosphate** [Li3Fe2(PO4)3] 123550-86-7, Lithium manganese oxide (Li0.5-1MnO2) 186131-68-0, **Iron lithium** vanadium **phosphate** (FeLi3V(PO4)3) 200938-46-1, Lithium manganese nickel oxide (Li2Mn1.5Ni0.5O4) 211753-57-0, Lithium vanadium oxide (Li1-6VO3) 211753-58-1, Iron lithium sulfate (Fe2Li3(SO4)3) 211753-59-2, Lithium vanadium phosphate (Li3V(PO4)3)
RL: DEV (Device component use); MOA (Modifier or additive use); USES (Uses)
(lithium ion supplier in cathode; Li secondary batteries with cathodes contg. Li metal oxide and Li+ supplier additives)

TI Nonaqueous-electrolyte lithium secondary battery having high discharge capacity

AB In the title battery, cathode contains a Li-contg. metal oxide as an active mass and another substance having Li+-discharging potential higher than that of the metal oxide and of amt. corresponding to an amt. of Li+ consumed in the initial charging. Preferably, the substance is selected from Li1+xMn2O4 (X = 0-1), Li2NiO2, LiMnO2, Li2Mn2-xMxO4 (M = Co, Ni, Zn, Mg, Fe; X = 0-2), Li2Mn1.5Ni0.5O4, LixVO3 (X = 1-6), Li3Fe2(PO4)3, Li3Fe2(SO4)3, Li3FeV(PO4)3, and Li3V(PO4)3. Anode in the battery may be selected from graphite, coke, (amorphous) carbon, SnO, SnO2, Sn1-xMxO (M = Hg, P, B, Si, Ge Sb; 0 .ltoreq. X < 1), Sn1-xMxO2 (M = Hg, P, B, Si, Ge, Sb; 0 .ltoreq. X < 1), Sn3O2(OH)2, Sn3-xMxO2(OH)2 (M = Mg, P, B, Si, Ge, Sb, As, Mn; 0 .ltoreq. X < 3), LiSiO2, SiO2, and LiSnO2. Lack of Li+ consumed in formation of a surficial film on the anode and Li+ trapped in the anode both occurring in the initial charging is supplemented by the substance.

L18 ANSWER 29 OF 29 CAPLUS COPYRIGHT 2003 ACS on STN
ACCESSION NUMBER: 1998:509367 CAPLUS
DOCUMENT NUMBER: 129:151162

TITLE: Electrolytic composition with polymer base for electrochemical generator

INVENTOR(S): Vallee, Alain; Armand, Michel; Choquette, Yves; Belanger, Andre; Gauthier, Michel; Perrier, Michel; Zaghib, Karim; Potvin, Estelle; Besner, Simon

PATENT ASSIGNEE(S): Hydro-Quebec, Can.

SOURCE: PCT Int. Appl., 56 pp.
CODEN: PIXXD2

DOCUMENT TYPE: Patent

LANGUAGE: French

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 9832183	A1	19980723	WO 1998-CA18	19980119
W: CA, JP, US				
RW: AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE				
CA 2195387	AA	19980717	CA 1997-2195387	19970117
CA 2249630	AA	19980723	CA 1998-2249630	19980119
EP 890192	A1	19990113	EP 1998-900830	19980119
R: DE, FR, GB, IT				
JP 2000507387	T2	20000613	JP 1998-533444	19980119
US 6280882	B1	20010828	US 1998-142055	19981214
US 2001041295	A1	20011115	US 2001-878356	20010612

PRIORITY APPLN. INFO.:

CA 1997-2195387	A	19970117
CA 1997-2221985	A	19971124
WO 1998-CA18	W	19980119
US 1998-142055	A3	19981214

IT Carbon black, uses
RL: DEV (Device component use); USES (Uses)
(cathode for battery with electrolyte contg. polymer matrix)

IT Battery anodes
Battery cathodes
(for batteries with electrolyte contg. polymer matrix)

IT EPDM rubber
Fluoropolymers, uses
Polyethers, uses
RL: TEM (Technical or engineered material use); USES (Uses)
(in polymer matrix for battery electrolyte)

IT Secondary batteries
(lithium; with electrolyte contg. polymer matrix)

IT Battery electrolytes
(with polymer matrix)

IT 7439-93-2, Lithium, uses **7782-42-5**, Graphite, uses
RL: DEV (Device component use); USES (Uses)
(anode for battery with electrolyte contg. polymer matrix)

IT 96-47-9, 2-Methyltetrahydrofuran 96-49-1, Ethylene carbonate 108-32-7, Propylene carbonate 109-99-9, Tetrahydrofuran, uses
RL: TEM (Technical or engineered material use); USES (Uses)
(aprotic solvent; in polymer matrix for battery electrolyte)

IT 1313-13-9, Manganese oxide (MnO2), uses 12039-13-3, Titanium sulfide (TiS2) 12190-79-3, Lithium cobalt oxide (LiCoO2) 14283-07-9, Lithium tetrafluoroborate
RL: DEV (Device component use); USES (Uses)
(cathode for battery with electrolyte contg. polymer matrix)

IT 21324-40-3, Lithium hexafluorophosphate
RL: TEM (Technical or engineered material use); USES (Uses)
(in battery electrolyte)

IT 96-48-0, .gamma.-Butyrolactone 110-71-4, 1,2-Dimethoxyethane 111-96-6, Bis(2-methoxyethyl) ether 126-33-0, Sulfolane 629-14-1, 1,2-Diethoxyethane 646-06-0, 1,3-Dioxolane 872-93-5, 3-Methylsulfolane

1634-04-4, tert-Butyl methyl ether 3290-92-4, Trimethylolpropane trimethacrylate 4437-85-8, Butylene carbonate 4986-89-4, Pentaerythritol tetraacrylate 5137-45-1, 1,2-Ethoxymethoxyethane 5459-38-1, Glycerol triacrylate 6163-66-2, tert-Butyl ether 7401-88-9, Glycerol trimethacrylate 9011-14-7, Polymethyl methacrylate 9011-17-0 13372-33-3, 4,4-Dimethyl-1,3-Dioxolane 15625-89-5, Trimethylolpropane triacrylate 24937-79-9, PVDF 25014-41-9, Polyacrylonitrile 25852-47-5, Polyoxyethylene dimethacrylate 26570-48-9, Polyoxyethylene diacrylate 29570-58-9, Dipentaerythritol hexaacrylate 52408-84-1 60506-81-2, Dipentaerythritol pentaacrylate 94108-97-1, Di(trimethylolpropane) tetraacrylate
RL: TEM (Technical or engineered material use); USES (Uses)
(in polymer matrix for battery electrolyte)

IT 10045-86-0, **Iron phosphate**
RL: DEV (Device component use); USES (Uses)
(**lithium**-contg.; cathode for battery with electrolyte contg. polymer matrix)

TI Electrolytic composition with polymer base for electrochemical generator

AB The invention concerns an aprotic electrolytic compn. located in the separator and in .gtoreq.1 composite electrode contg. a powder of an active electrode material, and if necessary an electronic conduction additive of an electrochem. generator. The electrolytic compn. comprises a 1st polymer matrix consisting of a polyether and .gtoreq.1 2nd polymer matrix, macroscopically sepd., and also .gtoreq.1 alk. salt as well as a polar aprotic solvent. The polymer matrixes can be swollen by .gtoreq.1 of the polar aprotic solvents. The solvent or mixt. of solvents is unevenly distributed between the polymer matrixes. The invention also concerns an electrochem. generator comprising a neg. electrode and pos. electrode reversible to alk. ions and a separator with polymer electrolyte, the electrolytic component of which is described. The invention further concerns the manuf. in 2 or 3 steps of a sub-assembly of an electrochem. generator by coating an electrode support with a composite electrode contg. the 2nd matrix, followed by a surface coating on the electrode resulting from the preceding step with a soln. contg. the 1st polymer matrix to form the separator wholly or partly.

REFERENCE COUNT: 2 THERE ARE 2 CITED REFERENCES AVAILABLE FOR THIS RECORD. AL